

IV. CULTIVARS AND GERM PLASM

USDA-ARS NATIONAL SMALL GRAINS GERMPLASM RESEARCH FACILITY
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www.ars-grin.gov/npgs

National Small Grains Collection Activities.

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Table 1. PI Assignments in *Triticum* from January 2004–February 2005.

| PI number | Taxon | Cultivar name or Identification number | Country | State/Province |
|-----------|--|--|---------------|----------------|
| 632635 | <i>aestivum</i> subsp. <i>aestivum</i> | Ok102 | United States | Oklahoma |
| 634538 | <i>aestivum</i> subsp. <i>aestivum</i> | Sebesta Blue-1 | United States | Oregon |
| 634539 | <i>aestivum</i> subsp. <i>aestivum</i> | Sebesta Blue-2 | United States | Oregon |
| 634540 | <i>aestivum</i> | Sebesta Blue-3 | United States | Oregon |
| 634550 | <i>aestivum</i> subsp. <i>aestivum</i> | Snowbird | Canada | |
| 634553 | <i>aestivum</i> | Oklee | United States | Minnesota |
| 634564 | <i>aestivum</i> | Pryor | United States | |
| 634567 | <i>aestivum</i> | Idaho 587 | United States | Idaho |
| 634568 | <i>aestivum</i> | Jerome | United States | Idaho |
| 634600 | <i>aestivum</i> | USG 3592 | United States | Georgia |
| 634715 | <i>aestivum</i> subsp. <i>aestivum</i> | Masami | United States | Washington |
| 634716 | <i>aestivum</i> subsp. <i>aestivum</i> | WA 7936 | United States | Washington |
| 634717 | <i>aestivum</i> subsp. <i>aestivum</i> | WA 7939 | United States | Washington |
| 634768 | <i>aestivum</i> subsp. <i>aestivum</i> | Betta-Dn1 | South Africa | |
| 634769 | <i>aestivum</i> | Betta-Dn2 | South Africa | |
| 634770 | <i>aestivum</i> | Betta-Dn9 | South Africa | |
| 634771 | <i>aestivum</i> | Tugela | South Africa | |
| 634772 | <i>aestivum</i> | Tugela-Dn2 | South Africa | |
| 634773 | <i>aestivum</i> | Karee | South Africa | |
| 634774 | <i>aestivum</i> | Karee-Dn2 | South Africa | |
| 634775 | <i>aestivum</i> | Karee-Dn8 | South Africa | |
| 634820 | <i>turgidum</i> subsp. <i>durum</i> | Alzada | United States | |
| 634821 | <i>aestivum</i> | Cooper | United States | |
| 634822 | <i>aestivum</i> | Beretta | United States | |
| 634823 | <i>aestivum</i> | Freyr | United States | |
| 634824 | <i>aestivum</i> subsp. <i>aestivum</i> | Truman | United States | Missouri |
| 634825 | <i>aestivum</i> subsp. <i>aestivum</i> | P961341 | United States | Indiana |
| 634854 | <i>aestivum</i> | XWO2M | United States | |
| 634858 | <i>aestivum</i> | Coker 9312 | United States | |
| 634859 | <i>aestivum</i> | Coker 9375 | United States | |
| 634865 | <i>aestivum</i> subsp. <i>aestivum</i> | Louise | United States | Washington |
| 634866 | <i>aestivum</i> subsp. <i>aestivum</i> | Otis | United States | Washington |
| 634936 | <i>aestivum</i> subsp. <i>aestivum</i> | ND 744 | United States | North Dakota |
| 634938 | <i>turgidum</i> subsp. <i>durum</i> | ELS 6404-120-4 | Ethiopia | Tigre |
| 634939 | <i>turgidum</i> subsp. <i>durum</i> | ELS 6404-141-3 | Ethiopia | Shewa |
| 634940 | <i>aestivum</i> subsp. <i>aestivum</i> | ELS 6404-151-1 | Ethiopia | Shewa |
| 634973 | <i>aestivum</i> | 8309 | United States | |

Table 1 (continued). PI Assignments in *Triticum* from January 2004–February 2005.

| PI number | Taxon | Cultivar name or Identification number | Country | State/Province |
|---|-------|--|---------------|----------------|
| 634974 <i>aestivum</i> | | Overley | United States | Kansas |
| 634975 <i>aestivum</i> | | 8302 | United States | |
| 634979 <i>aestivum</i> | | 8308 | United States | |
| 634981 <i>aestivum</i> subsp. <i>aestivum</i> | | Steele-ND | United States | North Dakota |
| 635044 <i>aestivum</i> subsp. <i>aestivum</i> | | Clear White | United States | California |
| 635054 <i>aestivum</i> subsp. <i>aestivum</i> | | KS99WGRC42 | United States | Kansas |
| 635145 <i>aestivum</i> subsp. <i>aestivum</i> | | Nela | Netherlands | |
| 635148 <i>aestivum</i> subsp. <i>aestivum</i> | | Renwood 3260 | United States | Virginia |
| 635156 <i>aestivum</i> subsp. <i>aestivum</i> | | Daisy | United States | Ohio |
| 635158 <i>aestivum</i> subsp. <i>aestivum</i> | | Super Dirkwin | United States | Idaho |
| 635996 <i>aestivum</i> subsp. <i>aestivum</i> | | Mohler | United States | |
| 636074 <i>aestivum</i> subsp. <i>aestivum</i> | | Arrino | Australia | |
| 636075 <i>aestivum</i> subsp. <i>aestivum</i> | | Calingiri | Australia | |
| 636076 <i>aestivum</i> subsp. <i>aestivum</i> | | Nyabing | Australia | |
| 636132 <i>aestivum</i> | | Simon | United States | Idaho |
| 636134 <i>aestivum</i> subsp. <i>aestivum</i> | | Granger | United States | South Dakota |
| 636136 <i>aestivum</i> subsp. <i>aestivum</i> | | LA 841 | United States | Louisiana |
| 636140 <i>aestivum</i> subsp. <i>aestivum</i> | | WL 711 | India | Punjab |
| 636141 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560596-sel-wcors | United States | Idaho |
| 636142 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560596-sel-wcows | United States | Idaho |
| 636143 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560599-sel-bcows | United States | Idaho |
| 636144 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560599-sel-bcors | United States | Idaho |
| 636145 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-bco | United States | Idaho |
| 636146 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-bcl | United States | Idaho |
| 636147 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-wclws | United States | Idaho |
| 636148 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-wclrs | United States | Idaho |
| 636149 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-wcors | United States | Idaho |
| 636150 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-wcows | United States | Idaho |
| 636151 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560603-sel-blaw | United States | Idaho |
| 636152 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560604-sel-aest | United States | Idaho |
| 636153 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560685-sel-cl | United States | Idaho |
| 636154 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560703-sel-bco | United States | Idaho |
| 636155 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560795-sel-bcows | United States | Idaho |
| 636156 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560795-sel-bcors | United States | Idaho |
| 636157 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560830-sel-wcors | United States | Idaho |
| 636158 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560830-sel-wcows | United States | Idaho |
| 636159 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560830-sel-bco | United States | Idaho |
| 636160 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560831-sel-bco | United States | Idaho |
| 636161 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560835-sel-bco | United States | Idaho |
| 636162 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560837-sel-wco | United States | Idaho |
| 636163 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560837-sel-bco | United States | Idaho |
| 636164 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560840-sel-wco | United States | Idaho |
| 636165 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560841-sel-wco | United States | Idaho |
| 636166 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560841-sel-bcl | United States | Idaho |
| 636167 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560841-sel-bco | United States | Idaho |
| 636168 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560842-sel-bcors | United States | Idaho |
| 636169 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560843-sel-aest | United States | Idaho |
| 636170 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560845-sel-wcl | United States | Idaho |
| 636171 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560845-sel-wco | United States | Idaho |
| 636172 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560845-sel-bclws | United States | Idaho |
| 636173 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560845-sel-bclrs | United States | Idaho |
| 636174 <i>aestivum</i> subsp. <i>aestivum</i> | | PI560846-sel-wco | United States | Idaho |

Table 1 (continued). PI Assignments in *Triticum* from January 2004–February 2005.

| PI number | Taxon | Cultivar name or Identification number | Country | State/Province |
|-----------|---|--|---------------|---------------------|
| 636175 | <i>aestivum</i> subsp. <i>aestivum</i> | T65 | India | Punjab |
| 636176 | <i>aestivum</i> subsp. <i>aestivum</i> | T266 | India | Punjab |
| 636177 | <i>aestivum</i> subsp. <i>aestivum</i> | 2640 | India | Punjab |
| 636307 | <i>aestivum</i> | Sturdy 2K | United States | Texas |
| 636316 | <i>aestivum</i> | Carlisle | Hungary | |
| 636317 | <i>aestivum</i> | Harvard | Germany | |
| 636318 | <i>aestivum</i> | Maxine | Germany | |
| 636367 | <i>aestivum</i> subsp. <i>aestivum</i> | WA7811 | United States | Washington |
| 636368 | <i>aestivum</i> subsp. <i>aestivum</i> | WA7832 | United States | Washington |
| 636369 | <i>aestivum</i> subsp. <i>aestivum</i> | WA7835 | United States | Washington |
| 636370 | <i>aestivum</i> subsp. <i>aestivum</i> | WA7870 | United States | Washington |
| 636427 | <i>aestivum</i> | Banton | United States | Minnesota |
| 636428 | <i>aestivum</i> | Triple IV | United States | |
| 636458 | <i>aestivum</i> | Clear First | United States | Washington |
| 636459 | <i>aestivum</i> subsp. <i>compactum</i> | MEL | United States | Washington |
| 636470 | <i>aestivum</i> subsp. <i>aestivum</i> | AR910 | United States | Arkansas |
| 636471 | <i>aestivum</i> subsp. <i>aestivum</i> | AR93005 | United States | Arkansas |
| 636498 | <i>turgidum</i> subsp. <i>durum</i> | L092 | United States | North Dakota 636499 |
| 636499 | <i>turgidum</i> subsp. <i>durum</i> | L252 | United States | North Dakota |
| 636500 | <i>turgidum</i> subsp. <i>durum</i> | S99B33 | United States | North Dakota |
| 636501 | <i>turgidum</i> subsp. <i>durum</i> | S99B34 | United States | North Dakota |
| 636754 | <i>aestivum</i> | McIntosh | United States | Georgia |
| 637779 | <i>aestivum</i> subsp. <i>aestivum</i> | Penawawa-X | United States | Washington |

Descriptor data obtained from evaluations of NSGC wheat germplasm are entered in the Germplasm Resources Information Network (GRIN www.ars-grin.gov/npgs). GRIN is the database containing all of the passport and evaluation data for genetic resources in the National Plant Germplasm System. Wheat Descriptors with data currently in GRIN are listed in Table 2.

Table 2. National Small Grains Collection evaluation of disease; insect; and agronomic, taxonomic, and quality data for wheat on the GRIN system, updated May, 2005.

| Character | Years | Location | Accessions |
|-----------------------------|----------------|------------------------------|------------|
| DISEASE DESCRIPTORS. | | | |
| Barley Yellow Dwarf Virus | 1985–92 | Davis, CA | 2,287 |
| Barley Yellow Dwarf Virus | 1988–94 | Urbana, IL | 17,517 |
| Soilborne Mosaic Virus | 1985–89 | Urbana, IL | 6,587 |
| Soilborne Mosaic Virus | 2000 | Manhattan, KS | 4,998 |
| Leaf Rust | 1983–89, 91–95 | Manhattan, KS | 38,751 |
| Leaf Rust – Adult | 2000 | Manhattan, KS | 5,000 |
| Stripe Rust – Adult | 1984–2004 | Mt. Vernon, WA | 44,690 |
| Stripe Rust – Adult | 1984–2004 | Pullman, WA | 35,215 |
| Stripe Rust – PST 17 | 1984–2004 | Pullman, WA | 18,832 |
| Stripe Rust – PST 20 | 1984–95 | Pullman, WA | 21,816 |
| Stripe Rust – PST 25 | 1984–95 | Pullman, WA | 1,682 |
| Stripe Rust – PST 27 | 1984–95 | Pullman, WA | 14,511 |
| Stripe Rust – PST 29 | 1984–95 | Pullman, WA | 14,259 |
| Stripe Rust – PST 37 | 1984–2004 | Pullman, WA | 14,360 |
| Stripe Rust – PST 43 | 1984–2004 | Pullman, WA | 13,989 |
| Stripe Rust – PST 45 | 1984–2004 | Pullman, WA | 14,362 |
| Stripe Rust – PST 78 | 2000–01 | Pullman, WA | 1,835 |
| Stripe Rust – PST100 | 2004 | Pullman, WA | 2,993 |
| Stem Rust – Adult | 1987–94 | Rosemount, MN | 8,078 |
| Stem Rust – Adult | 1987–94 | St. Paul, MN | 19,141 |
| Stem Rust – HJCS | 1987–92 | St. Paul, MN | 4,342 |
| Stem Rust – QFBS | 1987–92 | St. Paul, MN | 8,639 |
| Stem Rust – QSHS | 1987–92 | St. Paul, MN | 4,455 |
| Stem Rust – RHRS | 1987–92 | St. Paul, MN | 4,312 |
| Stem Rust – RTQQ | 1987–92 | St. Paul, MN | 8,973 |
| Stem Rust – TNMH | 1987–92 | St. Paul, MN | 4,402 |
| Stem Rust – TNMK | 1987–92 | St. Paul, MN | 8,938 |
| Stem Rust – HNLQ | 1987–92 | St. Paul, MN | 4,705 |
| Stem Rust – RKQS | 1987–92 | St. Paul, MN | 4,682 |
| Stem Rust – Genes | 1987–92 | St. Paul, MN | 1,018 |
| Common Bunt | 1981–2004 | Aberdeen, ID & Pendleton, OR | 25,245 |
| Dwarf Bunt | 1978–2004 | Logan, UT | 17,076 |
| Stagonospora nodorum Blotch | 1970–78 | Bozeman, MT | 8,095 |
| Powdery Mildew | 1996–2003 | Kinston, NC | 12,973 |
| Fusarium Head Blight/Scab | 1998–2002 | Brookings, SD | 4,084 |

Table 2 (continued). National Small Grains Collection evaluation of disease; insect; and agronomic, taxonomic, and quality data for wheat on the GRIN system, updated May, 2005.

| Character | Years | Location | Accessions |
|---|-----------|----------------------------------|------------|
| INSECT DESCRIPTORS. | | | |
| Hessian Fly – B | 1983–94 | W. Lafayette, IN | 449 |
| Hessian Fly – C | 1983–94 | W. Lafayette, IN & Manhattan, KS | 24,165 |
| Hessian Fly – E | 1983–94 | W. Lafayette, IN & Manhattan, KS | 24,149 |
| Hessian Fly – GP | 1983–94 | W. Lafayette, IN & Manhattan, KS | 14,441 |
| Hessian Fly – L | 1983–97 | W. Lafayette, IN & Manhattan, KS | 8,315 |
| Russian Wheat Aphid – Biotype 1 | 1988–95 | Stillwater, OK | 40,842 |
| Russian Wheat Aphid – Biotype 2 | 2003–05 | Ft. Collins, CO | 5,763 |
| Cereal Leaf Beetle | 1963–70 | Indiana, Michigan | 16,347 |
| AGRONOMIC, TAXONOMIC, AND QUALITY EVALUATIONS. | | | |
| Growth Habit | 1987–04 | Aberdeen, ID | 53,925 |
| Lysine Content | 1966–69 | Lincoln, NE | 10,367 |
| Awn Color | 1983–97 | Aberdeen, ID & Maricopa, AZ | 22,650 |
| Awn Type | 1983–97 | Aberdeen, ID & Maricopa, AZ | 26,561 |
| Glume Color | 1983–97 | Aberdeen, ID & Maricopa, AZ | 22,812 |
| Glume Pubescence | 1983–97 | Aberdeen, ID & Maricopa, AZ | 24,312 |
| Heading Date | 1983–94 | Aberdeen, ID & Maricopa, AZ | 18,365 |
| Heading Date – related to check | 1999–2003 | Maricopa, AZ | 39,347 |
| Kernel Color | 1983–94 | Aberdeen, ID & Maricopa, AZ | 21,319 |
| Kernels/Spike | 1983–94 | Aberdeen, ID & Maricopa, AZ | 3,666 |
| Kernel Weight | 1983–94 | Aberdeen, ID & Maricopa, AZ | 3,669 |
| Leaf Pubescence | 1983–94 | Aberdeen, ID & Maricopa, AZ | 20,888 |
| Plant Height | 1983–97 | Aberdeen, ID & Maricopa, AZ | 21,841 |
| Plant Height – related to check | 1999–2003 | Maricopa, AZ | 39,335 |
| Rachis Length | 1995 | Maricopa, AZ | 2,512 |
| Shattering | 1983–94 | Aberdeen, ID & Maricopa, AZ | 10,637 |
| Spike Density | 1983–98 | Aberdeen, ID & Maricopa, AZ | 15,823 |
| Spikelets/Spike | 1995 | Maricopa, AZ | 2,502 |
| Spike Type | 1983–97 | Aberdeen, ID & Maricopa, AZ | 15,551 |
| Straw Breakage | 1983–94 | Aberdeen, ID & Maricopa, AZ | 16,829 |
| Straw Color | 1983–97 | Aberdeen, ID & Maricopa, AZ | 24,142 |
| Straw Lodging | 1983–94 | Aberdeen, ID & Maricopa, AZ | 23,075 |

The authors wish to acknowledge the important contributions fo the NSGGRF staff in this effort, with special thanks to Glenda B. Rutger, Scott McNeil, Carol Mortenson, and Kay Calzada.

V. CATALOGUE OF GENE SYMBOLS FOR WHEAT: 2005 SUPPLEMENT

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The most recent edition of the Catalogue, produced and presented at the 10th International Wheat Genetics Symposium is available on CD. MacGene was produced by Y. Yamazaki (yyamazak@lab.nig.ac.jp) in collaboration with R.A. McIntosh. The Catalogue and the 2004 Supplement are displayed on the GrainGenes Website: <http://wheat.pw.usda.gov>.

Revisions.

Genes and Germplasm. TO BE ADDED AS CLAUSE 9 OF THE INTRODUCTION.

Agreed gene designations and appropriate germ plasm sources to represent them are the means of consolidating genetic knowledge in an orderly way. Such genetic stocks are reference points essential to the identification and development of new genes and germ plasm. Various past members of the International Wheat Genetics Symposia Committees and the Curators of the Wheat Gene Catalogue approved by the International Wheat Genetics Symposium have agreed that new wheat gene designations in nonreleased germ plasm will be provided only if suitable genetic stocks are available in at least one of a number of approved public germ plasm collections. Such stocks in some germ plasm collections, at least, can be protected by means of a Memorandum of Understanding limiting their use only to research. In most instances this will not apply to cultivars unless it is anticipated that such cultivars would be difficult to procure for research.

The currently approved collections are:

Australian Winter Cereals Collection
CIMMYT collection
ICARDA collection
John Innes Collection
Kansas State University Wheat Genetics Resource Centre Collection
Nordic Gene Bank (publicly available germplasm only)
USDA National Small Grains Collection.

9. Laboratory Designators for DNA markers

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Add at end of introductory section: Approximately 8000 ESTs were mapped on a set of 101 deletion lines, containing 159 deletions distributed over the 42 wheat chromosome arms. The allocation of these ESTs to chromosome 'bins' can be viewed on <http://wheat.pw.usda.gov/NSF/progress.mapping.html>.

Manuscripts resulting from this work include {10041} and {10042}.'

DNA Markers

Group 1AS

| | | | |
|----------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc119-1A</i> {10124} | 1AS | BARC119F / BARC119R |
| Correct | <i>Xbarc120-1A</i> {10124} | 1AS | BARC120F / BARC120R |
| Add reference | <i>Xbarc148-1A</i> {10124} | 1AS | BARC148F / BARC148R |
| Correct | <i>Xbarc162-1A</i> {10124} | 1AS | BARC162F / BARC162R |
| Add reference | <i>Xbarc263-1A</i> {10124} | 1AS | BARC263F / BARC263R |
| Correct to 1AS | <i>Xbarc28-1A</i> {10124} | 1AS | BARC28F / BARC28R |
| Add reference | <i>Xbarc6-1A</i> {10126} | 1AS | BARC6F / BARC6R |
| New | <i>Xbarc1048-1A</i> {10124} | 1AS | BARC1048F / BARC1048R |
| New | <i>Xbarc1095-1A</i> {10124} | 1AS | BARC1095F / BARC1095R |
| New | <i>Xbarc150-1A</i> {10124} | 1AS | BARC150F / BARC150R |
| New | <i>Xbarc176-1A</i> {10124} | 1AS | BARC176F / BARC176R |
| New | <i>Xbarc25-1A</i> {10124} | 1AS | BARC25F / BARC25R |
| New | <i>Xcfa2153-1A</i> {10126} | 1AS | CFA2153F / CFA2153R |

Group 1AL

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc158-1A</i> {10124} | 1AL | BARC158F / BARC158R |
| Add reference | <i>Xbarc17-1A</i> {10124} | 1AL | BARC17F / BARC17R |
| Add reference | <i>Xbarc213-1A</i> {10124} | 1AL | BARC213F / BARC213R |
| Add reference | <i>Xbarc287-1A</i> {10124} | 1AL | BARC287F / BARC287R |
| New | <i>Xbarc1022-1A</i> {10124} | 1AL | BARC1022F / BARC1022R |
| New | <i>Xbarc48-1A</i> {10124} | 1AL | BARC48F / BARC48R |
| New | <i>Xbarc83-1A</i> {10124} | 1AL | BARC83F / BARC83R |
| New | <i>Xgpw7068-1A</i> {10126} | 1AL | GPW7068F / GPW7068R |

Group 1A

| | | | |
|-----|-----------------------------|----|-----------------------|
| New | <i>Xbarc1168-1A</i> {10124} | 1A | BARC1168F / BARC1168R |
| New | <i>Xbarc145-1A</i> {10125} | 1A | BARC145F / BARC145R |
| New | <i>Xbarc209-1A</i> {10124} | 1A | BARC209F / BARC209R |
| New | <i>Xbarc240-1A</i> {10125} | 1A | BARC240F / BARC240R |
| New | <i>Xcfd22-1A</i> {10125} | 1A | CFD22F / CFD22R |
| New | <i>Xcfd30-1A</i> {10125} | 1A | CFD30F / CFD30R |
| New | <i>Xcfd59-1A</i> {10125} | 1A | CFD59F / CFD59R |
| New | <i>Xgdm136-1A</i> {10125} | 1A | DMS136F / DMS136R |
| New | <i>Xgwm11-1A</i> {10125} | 1A | WMS11F / WMS11R |
| New | <i>Xwmc11-1A</i> {10125} | 1A | WMC11F / WMC11R |
| New | <i>Xwmc183-1A</i> {10125} | 1A | WMC183F / WMC183R |
| New | <i>Xwmc469-1A</i> {10125} | 1A | WMC469F / WMC469R |
| New | <i>Xwmc51-1A</i> {10125} | 1A | WMC51F / WMC51R |
| New | <i>Xwmc611-1A</i> {10125} | 1A | WMC611F / WMC611R |
| New | <i>Xwmc630-1A</i> {10125} | 1A | WMC630F / WMC630R |
| New | <i>Xwmc673-1A</i> {10125} | 1A | WMC673F / WMC673R |
| New | <i>Xwmc716-1A</i> {10125} | 1A | WMC716F / WMC716R |
| New | <i>Xwmc744-1A</i> {10125} | 1A | WMC744F / WMC744R |
| New | <i>Xwmc818-1A</i> {10125} | 1A | WMC818F / WMC818R |
| New | <i>Xwmc826-1A</i> {10125} | 1A | WMC826F / WMC826R |
| New | <i>Xwmc9-1A</i> {10125} | 1A | WMC9F / WMC9R |

Group 1BS

| | | | |
|----------------|----------------------|-----|-----------------------|
| New | Xbarc1159-1B {10124} | 1BS | BARC1159F / BARC1159R |
| New | Xbarc194-1B {10124} | 1BS | BARC194F / BARC194R |
| New | Xcfd170-1B {10126} | 1BS | CFD170F / CFD170R |
| Correct to 1BS | Xcfa2241-1B {10126} | 1BS | CFA2241F / CFA2241R |
| New | Xgdm18-1B {10126} | 1BS | DMS18F / DMS18R |
| Correct to 1BS | Xgwm18-1B {10126} | 1BS | WMS18F / WMS18R |
| Correct to 1BS | Xgwm273-1B {10126} | 1BS | WMS273F / WMS273R |
| Correct to 1BS | Xgwm413-1B {10126} | 1BS | WMS413F / WMS413R |
| Add 1BS to 1AS | Xgwm33-1B {10126} | 1BS | WMS33F / WMS33R |

Group 1BL

| | | | |
|------------------|----------------------|-----|-----------------------|
| Add reference | Xbarc137-1B {10124} | 1BL | BARC137F / BARC137R |
| Add reference | Xbarc174-1B {10124} | 1BL | BARC174F / BARC174R |
| Add reference | Xbarc181-1B {10124} | 1BL | BARC181F / BARC181R |
| Add reference | Xbarc187-1B {10124} | 1BL | BARC187F / BARC187R |
| Add reference | Xbarc188-1B {10124} | 1BL | BARC188F / BARC188R |
| Add reference | Xbarc240-1B {10124} | 1BL | BARC240F / BARC240R |
| Add reference | Xbarc302-1B {10124} | 1BL | BARC302F / BARC302R |
| Add reference | Xbarc61-1B {10124} | 1BL | BARC61F / BARC61R |
| Add reference | Xbarc80-1B {10124} | 1BL | BARC80F / BARC80R |
| Add reference | Xbarc81-1B {10124} | 1BL | BARC81F / BARC81R |
| New | Xbarc1015-1B {10124} | 1BL | BARC1015F / BARC1015R |
| New | Xbarc1129-1B {10124} | 1BL | BARC1129F / BARC1129R |
| New | Xbarc1131-1B {10124} | 1BL | BARC1131F / BARC1131R |
| New | Xbarc131-1B {10126} | 1BL | BARC131F / BARC131R |
| Correct to 1BL | Xcfa2158-1B c | 1BL | CFA2158F / CFA2158R |
| Add 1BL | Xcfd20-1B {10126} | 1BL | CFD20F / CFD20R |
| Change 1B to 1BL | Xcfd48-1B {10126} | 1BL | CFD48F / CFD48R |
| New | Xcfd251-1B {10126} | 1BL | CFD251F / CFD251R |
| New | Xgdm268-1B {10126} | 1BL | DMS268 / DMS268 |
| Correct name | Xgwm264.2-1B {10126} | 1BL | WMS264 / WMS264 |
| Change 1B to 1BL | Xwmc52-1B {10126} | 1BL | WMC52F / WMC52R |

Group 1B

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc116-1B {10124} | 1B | BARC116F / BARC116R |
| New | Xbarc119-1B {10124} | 1B | BARC119F / BARC119R |
| New | Xbarc1094-1B {10124} | 1B | BARC1094F / BARC1094R |
| New | Xbarc1110-1B {10124} | 1B | BARC1110F / BARC1110R |
| New | Xbarc1115-1B {10124} | 1B | BARC1115F / BARC1115R |
| New | Xbarc1134-1B {10124} | 1B | BARC1134F / BARC1134R |
| New | Xbarc1154-1B {10124} | 1B | BARC1154F / BARC1154R |
| New | Xbarc1168-1B {10124} | 1B | BARC1168F / BARC1168R |
| New | Xbarc128-1B {10125} | 1B | BARC128F / BARC128R |
| New | Xbarc60-1B {10125} | 1B | BARC60F / BARC60R |
| New | Xbarc8-1B {10125} | 1B | BARC8F / BARC8R |
| New | Xcfa2129-1B {10125} | 1B | CFA2129F / CFA2129R |
| New | Xcfd2-1B {10125} | 1B | CFD2F / CFD2R |
| New | Xgdm101-1B {10125} | 1B | DMS101F / DMS101R |
| New | Xgdm136-1B {10125} | 1B | DMS136F / DMS136R |
| New | Xgdm33-1B {10125} | 1B | DMS33F / DMS33R |
| New | Xgdm36-1B {10125} | 1B | DMS36F / DMS36R |
| New | Xgwm133-1B {10125} | 1B | WMS133F / WMS133R |
| New | Xgwm374.1-1B {10125} | 1B | WMS374.1F / WMS374.1R |
| New | Xgwm374.2-1B {10125} | 1B | WMS374.2F / WMS374.2R |
| New | Xgwm494-1B {10125} | 1B | WMS494F / WMS494R |

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|-----|--------------------|----|-------------------|
| New | Xgwm608-IB {10125} | 1B | WMS608F / WMS608R |
| New | Xwmc128-IB {10125} | 1B | WMC128F / WMC128R |
| New | Xwmc206-IB {10125} | 1B | WMC206F / WMC206R |
| New | Xwmc213-IB {10125} | 1B | WMC213F / WMC213R |
| New | Xwmc269-IB {10125} | 1B | WMC269F / WMC269R |
| New | Xwmc31-IB {10125} | 1B | WMC31F / WMC31R |
| New | Xwmc367-IB {10125} | 1B | WMC367F / WMC367R |
| New | Xwmc416-IB {10125} | 1B | WMC416F / WMC416R |
| New | Xwmc419-IB {10125} | 1B | WMC419F / WMC419R |
| New | Xwmc597-IB {10125} | 1B | WMC597F / WMC597R |
| New | Xwmc611-IB {10125} | 1B | WMC611F / WMC611R |
| New | Xwmc619-IB {10125} | 1B | WMC619F / WMC619R |
| New | Xwmc626-IB {10125} | 1B | WMC626F / WMC626R |
| New | Xwmc631-IB {10125} | 1B | WMC631F / WMC631R |
| New | Xwmc673-IB {10125} | 1B | WMC673F / WMC673R |
| New | Xwmc694-IB {10125} | 1B | WMC694F / WMC694R |
| New | Xwmc719-IB {10125} | 1B | WMC719F / WMC719R |
| New | Xwmc728-IB {10125} | 1B | WMC728F / WMC728R |
| New | Xwmc766-IB {10125} | 1B | WMC766F / WMC766R |
| New | Xwmc798-IB {10125} | 1B | WMC798F / WMC798R |
| New | Xwmc813-IB {10125} | 1B | WMC813F / WMC813R |
| New | Xwmc818-IB {10125} | 1B | WMC818F / WMC818R |
| New | Xwmc830-IB {10125} | 1B | WMC830F / WMC830R |

Group 1DS

| | | | |
|-------------------|---------------------|-----|---------------------|
| Add reference | Xbarc152-ID {10124} | 1DS | BARC152F / BARC152R |
| New | Xbarc148-ID {10125} | 1DS | BARC148F / BARC148R |
| New | Xbarc149-ID {10124} | 1DS | BARC149F / BARC149R |
| Add to 1AS 1BS | Xcf15-ID {10126} | 1DS | CFD15F / CFD15R |
| Change 1DL to 1DS | Xcf21-ID {10126} | 1DS | CFD21F / CFD21R |
| Change 1DL to 1DS | Xcf58-ID {10126} | 1DS | CFD58F / CFD58R |
| New | Xgpw7082-ID {10126} | 1DS | GPW7082F / GPW7082R |
| Change 1DL to 1DS | Xgwm33-ID {10126} | 1DS | WMS33F / WMS33R |
| Change 1DL to 1DS | Xgwm337-ID {10126} | 1DS | WMS337F / WMS337R |
| Add to 1BS | Xgwm603-ID {10126} | 1DS | WMS603F / WMS603R |

Group 1DL

| | | | |
|---------------|-----------------------|-----|-----------------------|
| Add reference | Xbarc119-ID {10124} | 1DL | BARC119F / BARC119R |
| Add reference | Xbarc169-ID {10124} | 1DL | BARC169F / BARC169R |
| Correct | Xbarc229.1-ID {10124} | 1DL | BARC229F / BARC229R |
| Correct | Xbarc229.2-ID {10124} | 1DL | BARC229F / BARC229R |
| Add reference | Xbarc271-ID {10124} | 1DL | BARC271F / BARC271R |
| Add reference | Xbarc62-ID {10124} | 1DL | BARC62F / BARC62R |
| Add reference | Xbarc66-ID {10124} | 1DL | BARC66F / BARC66R |
| Add reference | Xbarc99-ID {10124} | 1DL | BARC99F / BARC99R |
| New | Xbarc1042-ID {10124} | 1DL | BARC1042F / BARC1042R |
| New | Xbarc1090-ID {10124} | 1DL | BARC1090F / BARC1090R |
| New | Xbarc1108-ID {10124} | 1DL | BARC1108F / BARC1108R |
| New | Xbarc1149-ID {10124} | 1DL | BARC1149F / BARC1149R |
| Add to 1AL | Xbarc162-ID {10124} | 1DL | BARC162F / BARC162R |
| New | Xbarc210-ID {10124} | 1DL | BARC210F / BARC210R |
| New | Xbarc346-ID {10124} | 1DL | BARC346F / BARC346R |

Group 1D

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc112-ID {10124} | 1D | BARC112F / BARC112R |
| New | Xbarc1150-ID {10124} | 1D | BARC1150F / BARC1150R |

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|------------|---------------------|----|---------------------|
| New | Xbarc240-1D {10125} | 1D | BARC240F / BARC240R |
| New | Xbarc27-1D {10124} | 1D | BARC27F / BARC27R |
| New | Xcfa2129-1D {10125} | 1D | CFA2129F / CFA2129R |
| New | Xcf15-1D {10125} | 1D | CFD15F / CFD15R |
| New | Xcf48-1D {10125} | 1D | CFD48F / CFD48R |
| Add to 1BS | Xcf92-1D {10126} | 1D | CFD92F / CFD92R |
| New | Xgwm147-1D {10125} | 1D | WMS147F / WMS147R |
| New | Xgwm191-1D {10125} | 1D | WMS191F / WMS191R |
| New | Xgwm608-1D {10125} | 1D | WMS608F / WMS608R |
| New | Xwmc261-1D {10125} | 1D | WMC261F / WMC261R |
| New | Xwmc339-1D {10125} | 1D | WMC339F / WMC339R |
| New | Xwmc405-1D {10125} | 1D | WMC405F / WMC405R |
| New | Xwmc489-1D {10125} | 1D | WMC489F / WMC489R |
| New | Xwmc590-1D {10125} | 1D | WMC590F / WMC590R |
| New | Xwmc609-1D {10125} | 1D | WMC609F / WMC609R |
| New | Xwmc673-1D {10125} | 1D | WMC673F / WMC673R |
| New | Xwmc732-1D {10125} | 1D | WMC732F / WMC732R |
| New | Xwmc813-1D {10125} | 1D | WMC813F / WMC813R |

Group 2AS

| | | | |
|------------------|------------------------|-----|-----------------------|
| Correct | Xbarc1138.1-2A {10124} | 2AS | BARC1138F / BARC1138R |
| Correct | Xbarc1138.2-2A {10124} | 2AS | BARC1138F / BARC1138R |
| Add reference | Xbarc124-2A {10124} | 2AS | BARC124F / BARC124R |
| Add reference | Xbarc212-2A {10124} | 2AS | BARC212F / BARC212R |
| Add reference | Xbarc231-2A {10124} | 2AS | BARC231F / BARC231R |
| Add reference | Xbarc5-2A {10124} | 2AS | BARC5F / BARC5R |
| New | Xbarc201-2A {10124} | 2AS | BARC201F / BARC201R |
| New | Xbarc208-2A {10124} | 2AS | BARC208F / BARC208R |
| Change 2A to 2AS | Xcf2-2A {10126} | 2AS | CFD2F / CFD2R |
| New | Xcf50-2A {10126} | 2AS | CFD50F / CFD50R |

Group 2AL

| | | | |
|-------------------|-----------------------|-----|---------------------|
| Add reference | Xbarc279-2A {10124} | 2AL | BARC279F / BARC279R |
| Add reference | Xbarc309-2A {10124} | 2AL | BARC309F / BARC309R |
| Correct | Xbarc353.1-2A {10124} | 2AL | BARC353F / BARC353R |
| Correct | Xbarc353.2-2A {10124} | 2AL | BARC353F / BARC353R |
| New | Xbarc15-2A {10124} | 2AL | BARC15F / BARC15R |
| New | Xbarc220-2A {10124} | 2AL | BARC220F / BARC220R |
| Add to 2BL | Xcf267-2A {10126} | 2AL | CFD267F / CFD267R |
| Change 2AS to 2AL | Xgpw2111-2A {10126} | 2AL | GPW2111F / GPW2111R |
| Change 2AS to 2AL | Xgwm249-2A {10126} | 2AL | WMS249F / WMS249R |

Group 2A

| | | | |
|-----|---------------------|----|---------------------|
| New | Xbarc76-2A {10125} | 2A | BARC76F / BARC76R |
| New | Xbarc138-2A {10126} | 2A | BARC138F / BARC138R |
| New | Xcf168-2A {10125} | 2A | CFD168F / CFD168R |
| New | Xcf6-2A {10125} | 2A | CFD6F / CFD6R |
| New | Xcf86-2A {10125} | 2A | CFD86F / CFD86R |
| New | Xgdm101-2A {10125} | 2A | DMS101F / DMS101R |
| New | Xwmc149-2A {10125} | 2A | WMC149F / WMC149R |
| New | Xwmc455-2A {10125} | 2A | WMC455F / WMC455R |
| New | Xwmc598-2A {10125} | 2A | WMC598F / WMC598R |
| New | Xwmc602-2A {10125} | 2A | WMC602F / WMC602R |
| New | Xwmc632-2A {10125} | 2A | WMC632F / WMC632R |
| New | Xwmc644-2A {10125} | 2A | WMC644F / WMC644R |
| New | Xwmc658-2A {10125} | 2A | WMC658F / WMC658R |

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|-----|---------------------------|----|-------------------|
| New | <i>Xwmc667-2A {10125}</i> | 2A | WMC667F / WMC667R |
| New | <i>Xwmc702-2A {10125}</i> | 2A | WMC702F / WMC702R |
| New | <i>Xwmc728-2A {10125}</i> | 2A | WMC728F / WMC728R |
| New | <i>Xwmc792-2A {10125}</i> | 2A | WMC792F / WMC792R |
| New | <i>Xwmc794-2A {10125}</i> | 2A | WMC794F / WMC794R |
| New | <i>Xwmc819-2A {10125}</i> | 2A | WMC819F / WMC819R |
| New | <i>Xwmc827-2A {10125}</i> | 2A | WMC827F / WMC827R |

Group 2BS

| | | | |
|-------------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc13-2B {10124}</i> | 2BS | BARC13F / BARC13R |
| Add reference | <i>Xbarc160-2B {10124}</i> | 2BS | BARC160F / BARC160R |
| Add reference | <i>Xbarc18-2B {10124}</i> | 2BS | BARC18F / BARC18R |
| Add reference | <i>Xbarc200-2B {10124}</i> | 2BS | BARC200F / BARC200R |
| Add reference | <i>Xbarc318-2B {10124}</i> | 2BS | BARC318F / BARC318R |
| Add reference | <i>Xbarc349-2B {10124}</i> | 2BS | BARC349F / BARC349R |
| Add reference | <i>Xbarc361-2B {10124}</i> | 2BS | BARC361F / BARC361R |
| Add reference | <i>Xbarc7-2B {10124}</i> | 2BS | BARC7F / BARC7R |
| Add reference | <i>Xbarc91-2B {10124}</i> | 2BS | BARC91F / BARC91R |
| New | <i>Xbarc1024-2B {10124}</i> | 2BS | BARC1024F / BARC1024R |
| New | <i>Xbarc1072-2B {10124}</i> | 2BS | BARC1072F / BARC1072R |
| New | <i>Xbarc1114-2B {10124}</i> | 2BS | BARC1114F / BARC1114R |
| New | <i>Xbarc1142-2B {10124}</i> | 2BS | BARC1142F / BARC1142R |
| New | <i>Xbarc230-2B {10124}</i> | 2BS | BARC230F / BARC230R |
| New | <i>Xbarc35-2B {10124}</i> | 2BS | BARC35F / BARC35R |
| New | <i>Xbarc55-2B {10124}</i> | 2BS | BARC55F / BARC55R |
| Change 2BL to 2BS | <i>Xgwm374-2B {10126}</i> | 2BS | WMS374F / WMS374R |
| Change 2BL to 2BS | <i>Xgwm319-2B {10126}</i> | 2BS | WMS319F / WMS319R |

Group 2BL

| | | | |
|-------------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc101-2B {10124}</i> | 2BL | BARC101F / BARC101R |
| Add reference | <i>Xbarc128-2B {10124}</i> | 2BL | BARC128F / BARC128R |
| New | <i>Xbarc1027-2B {10124}</i> | 2BL | BARC1027F / BARC1027R |
| New | <i>Xbarc1042-2B {10124}</i> | 2BL | BARC1042F / BARC1042R |
| New | <i>Xbarc1108-2B {10124}</i> | 2BL | BARC1108F / BARC1108R |
| New | <i>Xbarc1135-2B {10124}</i> | 2BL | BARC1135F / BARC1135R |
| New | <i>Xbarc1139-2B {10124}</i> | 2BL | BARC1139F / BARC1139R |
| New | <i>Xbarc114-2B {10124}</i> | 2BL | BARC114F / BARC114R |
| New | <i>Xbarc1147-2B {10124}</i> | 2BL | BARC1147F / BARC1147R |
| New | <i>Xbarc115-2B {10124}</i> | 2BL | BARC115F / BARC115R |
| New | <i>Xbarc1156-2B {10124}</i> | 2BL | BARC1156F / BARC1156R |
| New | <i>Xbarc1160-2B {10124}</i> | 2BL | BARC1160F / BARC1160R |
| New | <i>Xbarc150-2B {10124}</i> | 2BL | BARC150F / BARC150R |
| New | <i>Xbarc16-2B {10124}</i> | 2BL | BARC16F / BARC16R |
| New | <i>Xbarc167-2B {10124}</i> | 2BL | BARC167F / BARC167R |
| New | <i>Xbarc210-2B {10124}</i> | 2BL | BARC210F / BARC210R |
| New | <i>Xbarc221-2B {10124}</i> | 2BL | BARC221F / BARC221R |
| Change 2B to 2BL | <i>Xcfd25-2B {10126}</i> | 2BL | CFD25F / CFD25R |
| Add to 2DL | <i>Xcfd50-2B {10126}</i> | 2BL | CFD50F / CFD50R |
| Change 2BS to 2BL | <i>Xcfd73-2B {10126}</i> | 2BL | CFD73F / CFD73R |

Group 2B

| | | | |
|-----|-----------------------------|----|-----------------------|
| New | <i>Xbarc10-2B {10125}</i> | 2B | BARC10F / BARC10R |
| New | <i>Xbarc1064-2B {10124}</i> | 2B | BARC1064F / BARC1064R |
| New | <i>Xbarc1154-2B {10124}</i> | 2B | BARC1154F / BARC1154R |
| New | <i>Xbarc116-2B {10124}</i> | 2B | BARC116F / BARC116R |
| New | <i>Xbarc124-2B {10125}</i> | 2B | BARC124F / BARC124R |

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|-----|---------------------|----|---------------------|
| New | Xbarc159-2B {10125} | 2B | BARC159F / BARC159R |
| New | Xbarc183-2B {10125} | 2B | BARC183F / BARC183R |
| New | Xbarc45-2B {10125} | 2B | BARC45F / BARC45R |
| New | Xbarc98-2B {10125} | 2B | BARC98F / BARC98R |
| New | Xcf70-2B {10125} | 2B | CFD70F / CFD70R |
| New | Xgwm132-2B {10125} | 2B | WMS132F / WMS132R |
| New | Xwmc261-2B {10125} | 2B | WMC261F / WMC261R |
| New | Xwmc27-2B {10125} | 2B | WMC27F / WMC27R |
| New | Xwmc356-2B {10125} | 2B | WMC356F / WMC356R |
| New | Xwmc382-2B {10125} | 2B | WMC382F / WMC382R |
| New | Xwmc489-2B {10125} | 2B | WMC489F / WMC489R |
| New | Xwmc498-2B {10125} | 2B | WMC498F / WMC498R |
| New | Xwmc500-2B {10125} | 2B | WMC500F / WMC500R |
| New | Xwmc592-2B {10125} | 2B | WMC592F / WMC592R |
| New | Xwmc597-2B {10125} | 2B | WMC597F / WMC597R |
| New | Xwmc602-2B {10125} | 2B | WMC602F / WMC602R |
| New | Xwmc627-2B {10125} | 2B | WMC627F / WMC627R |
| New | Xwmc661-2B {10125} | 2B | WMC661F / WMC661R |
| New | Xwmc764-2B {10125} | 2B | WMC764F / WMC764R |
| New | Xwmc770-2B {10125} | 2B | WMC770F / WMC770R |
| New | Xwmc817-2B {10125} | 2B | WMC817F / WMC817R |

Group 2DS

| | | | |
|------------------|----------------------|-----|-----------------------|
| Add reference | Xbarc124-2D {10124} | 2DS | BARC124F / BARC124R |
| Add reference | Xbarc168-2D {10124} | 2DS | BARC168F / BARC168R |
| Add reference | Xbarc297-2D {10124} | 2DS | BARC297F / BARC297R |
| New | Xbarc1070-2D {10124} | 2DS | BARC1070F / BARC1070R |
| New | Xbarc1146-2D {10124} | 2DS | BARC1146F / BARC1146R |
| New | Xbarc95-2D {10124} | 2DS | BARC95F / BARC95R |
| New | Xcf175-2D {10126} | 2DS | CFD175F / CFD175R |
| New | Xcnl1-2D {10126} | 2DS | CNL1F / CNL1R |
| New | Xcnl3-2D {10126} | 2DS | CNL3F / CNL3R |
| Add to 2AS | Xgdm5-2D {10126} | 2DS | DMS5F / DMS5R |
| Change 2D to 2DS | Xgdm77-2D {10126} | 2DS | DMS77F / DMS77R |

Group 2DL

| | | | |
|---------------|----------------------|-----|-----------------------|
| Add reference | Xbarc11-2D {10124} | 2DL | BARC11F / BARC11R |
| Add reference | Xbarc145-2D {10124} | 2DL | BARC145F / BARC145R |
| Add reference | Xbarc159-2D {10124} | 2DL | BARC159F / BARC159R |
| Add reference | Xbarc219-2D {10124} | 2DL | BARC219F / BARC219R |
| Add reference | Xbarc228-2D {10124} | 2DL | BARC228F / BARC228R |
| Add reference | Xbarc292-2D {10124} | 2DL | BARC292F / BARC292R |
| New | Xbarc1095-2D {10124} | 2DL | BARC1095F / BARC1095R |
| New | Xbarc1143-2D {10124} | 2DL | BARC1143F / BARC1143R |
| Add to 2DL | Xcf267-2D {10126} | 2DL | CFD267F / CFD267R |

Group 2D

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc103-2D {10124} | 2D | BARC103F / BARC103R |
| New | Xbarc112-2D {10124} | 2D | BARC112F / BARC112R |
| New | Xbarc1153-2D {10124} | 2D | BARC1153F / BARC1153R |
| New | Xbarc235-2D {10124} | 2D | BARC235F / BARC235R |
| New | Xbarc59-2D {10125} | 2D | BARC59F / BARC59R |
| New | Xbarc90-2D {10125} | 2D | BARC90F / BARC90R |
| New | Xcf193-2D {10125} | 2D | CFD193F / CFD193R |
| New | Xcf65-2D {10125} | 2D | CFD65F / CFD65R |
| New | Xgwm122-2D {10125} | 2D | WMS122F / WMS122R |

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|-----|---------------------------|----|-------------------|
| New | <i>Xwmc144-2D</i> {10125} | 2D | WMC144F / WMC144R |
| New | <i>Xwmc601-2D</i> {10125} | 2D | WMC601F / WMC601R |
| New | <i>Xwmc630-2D</i> {10125} | 2D | WMC630F / WMC630R |
| New | <i>Xwmc797-2D</i> {10125} | 2D | WMC797F / WMC797R |
| New | <i>Xwmc817-2D</i> {10125} | 2D | WMC817F / WMC817R |
| New | <i>Xwmc818-2D</i> {10125} | 2D | WMC818F / WMC818R |

Group 3AS

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc12-3A</i> {10124} | 3AS | BARC12F / BARC12R |
| Add reference | <i>Xbarc179-3A</i> {10124} | 3AS | BARC179F / BARC179R |
| Add reference | <i>Xbarc19-3A</i> {10124} | 3AS | BARC19F / BARC19R |
| Add reference | <i>Xbarc294-3A</i> {10124} | 3AS | BARC294F / BARC294R |
| Add reference | <i>Xbarc310-3A</i> {10124} | 3AS | BARC310F / BARC310R |
| Add reference | <i>Xbarc321-3A</i> {10124} | 3AS | BARC321F / BARC321R |
| Add reference | <i>Xbarc324-3A</i> {10124} | 3AS | BARC324F / BARC324R |
| Add reference | <i>Xbarc356-3A</i> {10124} | 3AS | BARC356F / BARC356R |
| Correct | <i>Xbarc45-3A</i> {10124} | 3AS | BARC45F / BARC45R |
| Correct | <i>Xbarc57.1-3A</i> {10124} | 3AS | BARC57.1F / BARC57.1R |
| Add reference | <i>Xbarc67-3A</i> {10124} | 3AS | BARC67F / BARC67R |
| New | <i>Xbarc1171-3A</i> {10124} | 3AS | BARC1171F / BARC1171R |
| New | <i>Xbarc54-3A</i> {10124} | 3AS | BARC54F / BARC54R |
| New | <i>Xbarc86-3A</i> {10124} | 3AS | BARC86F / BARC86R |

Group 3AL

| | | | |
|-------------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc197-3A</i> {10124} | 3AL | BARC197F / BARC197R |
| Add reference | <i>Xbarc25-3A</i> {10124} | 3AL | BARC25F / BARC25R |
| Correct | <i>Xbarc284-3A</i> {10124} | 3AL | BARC284F / BARC284R |
| Add reference | <i>Xbarc314-3A</i> {10124} | 3AL | BARC314F / BARC314R |
| New | <i>Xbarc1021-3A</i> {10124} | 3AL | BARC1021F / BARC1021R |
| New | <i>Xbarc1040-3A</i> {10126} | 3AL | BARC1040F / BARC1040R |
| New | <i>Xbarc105-3A</i> {10124} | 3AL | BARC105F / BARC105R |
| New | <i>Xbarc1060-3A</i> {10124} | 3AL | BARC1060F / BARC1060R |
| New | <i>Xbarc1099-3A</i> {10124} | 3AL | BARC1099F / BARC1099R |
| New | <i>Xbarc1113-3A</i> {10124} | 3AL | BARC1113F / BARC1113R |
| New | <i>Xbarc1177-3A</i> {10124} | 3AL | BARC1177F / BARC1177R |
| New | <i>Xbarc1193-3A</i> {10124} | 3AL | BARC1193F / BARC1193R |
| New | <i>Xbarc150-3A</i> {10124} | 3AL | BARC150F / BARC150R |
| New | <i>Xbarc164-3A</i> {10126} | 3AL | BARC164F / BARC164R |
| New | <i>Xbarc193-3A</i> {10124} | 3AL | BARC193F / BARC193R |
| New | <i>Xbarc51-3A</i> {10124} | 3AL | BARC51F / BARC51R |
| New | <i>Xbarc57.2-3A</i> {10124} | 3AL | BARC57.2F / BARC57.2R |
| New | <i>Xcfa2037-3A</i> {10126} | 3AL | CFA2037F / CFA2037R |
| New | <i>Xcfa2076-3A</i> {10126} | 3AL | CFA2076F / CFA2076R |
| New | <i>Xcfa2183-3A</i> {10126} | 3AL | CFA2183F / CFA2183R |
| Add to 3DL | <i>Xcnl4-3A</i> {10126} | 3AL | CNL4F / CNL4R |
| Add to 3BL, 3DL | <i>Xgwm114-3A</i> {10126} | 3AL | WMS114F / WMS114R |
| New | <i>Xgwm674-3A</i> {10126} | 3AL | WMS674F / WMS674R |
| Change 3AS to 3AL | <i>Xgwm218-3A</i> {10126} | 3AL | WMS218F / WMS218R |
| Change 3AS to 3AL | <i>Xgwm32-3A</i> {10126} | 3AL | WMS32F / WMS32R |
| Change 3AS to 3AL | <i>Xgwm5-3A</i> {10126} | 3AL | WMS5F / WMS5R |
| Add to 2BS, 2BL | <i>Xwmc175-3A</i> {10126} | 3AL | WMC175F / WMC175R |

Group 3A

| | | | |
|-----|-----------------------------|----|-----------------------|
| New | <i>Xbarc1040-3A</i> {10126} | 3A | BARC1040F / BARC1040R |
| New | <i>Xbarc112-3A</i> {10124} | 3A | BARC112F / BARC112R |
| New | <i>Xbarc1159-3A</i> {10124} | 3A | BARC1159F / BARC1159R |

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|-----|---------------------|----|---------------------|
| New | Xbarc215-3A {10124} | 3A | BARC215F / BARC215R |
| New | Xbarc69-3A {10125} | 3A | BARC69F / BARC69R |
| New | Xcfa2076-3A {10125} | 3A | CFA2076F / CFA2076R |
| New | Xcf193-3A {10125} | 3A | CFD193F / CFD193R |
| New | Xgwm133-3A {10125} | 3A | WMS133F / WMS133R |
| New | Xgwm403-3A {10125} | 3A | WMS403F / WMS403R |
| New | Xgwm4-3A {10125} | 3A | WMS4F / WMS4R |
| New | Xgwm494-3A {10125} | 3A | WMS494F / WMS494R |
| New | Xgwm674-3A {10125} | 3A | WMS674F / WMS674R |
| New | Xwmc173-3A {10125} | 3A | WMC173F / WMC173R |
| New | Xwmc215-3A {10125} | 3A | WMC215F / WMC215R |
| New | Xwmc532-3A {10125} | 3A | WMC532F / WMC532R |
| New | Xwmc559-3A {10125} | 3A | WMC559F / WMC559R |
| New | Xwmc594-3A {10125} | 3A | WMC594F / WMC594R |
| New | Xwmc627-3A {10125} | 3A | WMC627F / WMC627R |
| New | Xwmc640-3A {10125} | 3A | WMC640F / WMC640R |
| New | Xwmc651-3A {10125} | 3A | WMC651F / WMC651R |
| New | Xwmc664-3A {10125} | 3A | WMC664F / WMC664R |
| New | Xwmc695-3A {10125} | 3A | WMC695F / WMC695R |
| New | Xwmc96-3A {10125} | 3A | WMC96F / WMC96R |

Group 3BS

| | | | |
|-------------------|---------------------|-----|---------------------|
| Add reference | Xbarc102-3B {10124} | 3BS | BARC102F / BARC102R |
| Add reference | Xbarc133-3B {10124} | 3BS | BARC133F / BARC133R |
| Add reference | Xbarc147-3B {10124} | 3BS | BARC147F / BARC147R |
| Add reference | Xbarc218-3B {10124} | 3BS | BARC218F / BARC218R |
| Add reference | Xbarc75-3B {10124} | 3BS | BARC75F / BARC75R |
| New | Xbarc139-3B {10124} | 3BS | BARC139F / BARC139R |
| New | Xbarc156-3B {10124} | 3BS | BARC156F / BARC156R |
| New | Xbarc68-3B {10124} | 3BS | BARC68F / BARC68R |
| New | Xbarc73-3B {10124} | 3BS | BARC73F / BARC73R |
| New | Xbarc87-3B {10124} | 3BS | BARC87F / BARC87R |
| New | Xcfa2191-3B {10126} | 3BS | CFA2191F / CFA2191R |
| Add to 1AS | Xcfa2226-3B {10126} | 3BS | CFA2226F / CFA2226R |
| New | Xcf143-3B {10126} | 3BS | CFD143F / CFD143R |
| Change 3BL to 3BS | Xgwm566-3B {10126} | 3BS | WMS566F / WMS566R |

Group 3BL

| | | | |
|-------------------|----------------------|-----|-----------------------|
| Add reference | Xbarc164-3B {10124} | 3BL | BARC164F / BARC164R |
| Add reference | Xbarc344-3B {10124} | 3BL | BARC344F / BARC344R |
| Add reference | Xbarc84-3B {10124} | 3BL | BARC84F / BARC84R |
| New | Xbarc1044-3B {10124} | 3BL | BARC1044F / BARC1044R |
| New | Xbarc1077-3B {10124} | 3BL | BARC1077F / BARC1077R |
| New | Xbarc1124-3B {10124} | 3BL | BARC1124F / BARC1124R |
| New | Xbarc115-3B {10124} | 3BL | BARC115F / BARC115R |
| New | Xbarc203-3B {10124} | 3BL | BARC203F / BARC203R |
| New | Xbarc77-3B {10124} | 3BL | BARC77F / BARC77R |
| Change 3BS to 3BL | Xgpw1146-3B {10126} | 3BL | GPW1146F / GPW1146R |
| Change 3BS to 3BL | Xgwm376-3B {10126} | 3BL | WMS376F / WMS376R |
| Add to 1DS | Xcfa2170-3B {10126} | 3BL | CFA2170F / CFA2170R |

Group 3B

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc101-3B {10113} | 3B | BARC101F / BARC101R |
| New | Xbarc1040-3B {10126} | 3B | BARC1040F / BARC1040R |
| New | Xbarc112-3B {10124} | 3B | BARC112F / BARC112R |
| New | Xbarc131-3B {10124} | 3B | BARC131F / BARC131R |

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|-----|---------------------|----|----------------------|
| New | Xbarc135-3B {10126} | 3B | BARC135F / BARC135R |
| New | Xbarc145-3B {10125} | 3B | BARC145F / BARC145R |
| New | Xbarc173-3B {10125} | 3B | BARC173F / BARC173R |
| New | Xbarc180-3B {10125} | 3B | BARC180F / BARC180R |
| New | Xbarc206-3B {10125} | 3B | BARC206F / BARC206R |
| New | Xbarc229-3B {10125} | 3B | BARC229F / BARC229R |
| New | Xbarc234-3B {10124} | 3B | BARC234F / BARC234R |
| New | Xbarc92-3B {10125} | 3B | BARC92F / BARC92R |
| New | Xcfa2134-3B {10125} | 3B | CFA2134 F / CFA2134R |
| New | Xcfa2170-3B {10125} | 3B | CFA2170F / CFA2170R |
| New | Xcfd283-3B {10125} | 3B | CFD283F / CFD283R |
| New | Xcfd28-3B {10125} | 3B | CFD28F / CFD28R |
| New | Xcfd6-3B {10125} | 3B | CFD6F / CFD6R |
| New | Xgwm274-3B {10125} | 3B | WMS274F / WMS274R |
| New | Xgwm644-3B {10125} | 3B | WMS644F / WMS644R |
| New | Xwmc1-3B {10125} | 3B | WMC1F / WMC1R |
| New | Xwmc182-3B {10125} | 3B | WMC182F / WMC182R |
| New | Xwmc206-3B {10125} | 3B | WMC206F / WMC206R |
| New | Xwmc261-3B {10125} | 3B | WMC261F / WMC261R |
| New | Xwmc274-3B {10125} | 3B | WMC274F / WMC274R |
| New | Xwmc307-3B {10125} | 3B | WMC307F / WMC307R |
| New | Xwmc430-3B {10125} | 3B | WMC430F / WMC430R |
| New | Xwmc446-3B {10125} | 3B | WMC446F / WMC446R |
| New | Xwmc51-3B {10125} | 3B | WMC51F / WMC51R |
| New | Xwmc533-3B {10125} | 3B | WMC533F / WMC533R |
| New | Xwmc544-3B {10125} | 3B | WMC544F / WMC544R |
| New | Xwmc597-3B {10125} | 3B | WMC597F / WMC597R |
| New | Xwmc612-3B {10125} | 3B | WMC612F / WMC612R |
| New | Xwmc615-3B {10125} | 3B | WMC615F / WMC615R |
| New | Xwmc623-3B {10125} | 3B | WMC623F / WMC623R |
| New | Xwmc625-3B {10125} | 3B | WMC625F / WMC625R |
| New | Xwmc632-3B {10125} | 3B | WMC632F / WMC632R |
| New | Xwmc653-3B {10125} | 3B | WMC653F / WMC653R |
| New | Xwmc674-3B {10125} | 3B | WMC674F / WMC674R |
| New | Xwmc675-3B {10125} | 3B | WMC675F / WMC675R |
| New | Xwmc679-3B {10125} | 3B | WMC679F / WMC679R |
| New | Xwmc687-3B {10125} | 3B | WMC687F / WMC687R |
| New | Xwmc693-3B {10125} | 3B | WMC693F / WMC693R |
| New | Xwmc695-3B {10125} | 3B | WMC695F / WMC695R |
| New | Xwmc751-3B {10125} | 3B | WMC751F / WMC751R |
| New | Xwmc754-3B {10125} | 3B | WMC754F / WMC754R |
| New | Xwmc762-3B {10125} | 3B | WMC762F / WMC762R |
| New | Xwmc777-3B {10125} | 3B | WMC777F / WMC777R |
| New | Xwmc787-3B {10125} | 3B | WMC787F / WMC787R |
| New | Xwmc808-3B {10125} | 3B | WMC808F / WMC808R |
| New | Xwmc815-3B {10125} | 3B | WMC815F / WMC815R |
| New | Xwmc827-3B {10125} | 3B | WMC827F / WMC827R |

Group 3DS

| | | | |
|---------------|----------------------|-----|-----------------------|
| Add reference | Xbarc321-3D {10124} | 3DS | BARC321F / BARC321R |
| Add to 3DL | Xbarc6-3D {10124} | 3DS | BARC6F / BARC6R |
| Add reference | Xbarc8-3D {10124} | 3DS | BARC8F / BARC8R |
| New | Xbarc1040-3D {10124} | 3DS | BARC1040F / BARC1040R |
| New | Xbarc1119-3D {10124} | 3DS | BARC1119F / BARC1119R |
| New | Xbarc132-3D {10124} | 3DS | BARC132F / BARC132R |
| New | Xbarc135-3D {10124} | 3DS | BARC135F / BARC135R |

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|-------------------|----------------------------|-----|---------------------|
| New | <i>Xbarc150-3D</i> {10124} | 3DS | BARC150F / BARC150R |
| Change 3DL to 3DS | <i>Xcf2-3D</i> {10126} | 3DS | CFD2F / CFD2R |
| Change 3DL to 3DS | <i>Xgpw1168-3D</i> {10126} | 3DS | GPW1168F / GPW1168R |
| Change 3DL to 3DS | <i>Xgwm341-3D</i> {10126} | 3DS | WMS341F / WMS341R |

Group 3DL

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc270-3D</i> {10124} | 3DL | BARC270F / BARC270R |
| Add reference | <i>Xbarc323-3D</i> {10124} | 3DL | BARC323F / BARC323R |
| Add reference | <i>Xbarc42-3D</i> {10124} | 3DL | BARC42F / BARC42R |
| New | <i>Xbarc1162-3D</i> {10124} | 3DL | BARC1162F / BARC1162R |
| New | <i>Xbarc71-3D</i> {10124} | 3DL | BARC71F / BARC71R |

Group 3D

| | | | |
|-----|-----------------------------|----|-----------------------|
| New | <i>Xbarc1161-3D</i> {10124} | 3D | BARC1161F / BARC1161R |
| New | <i>Xbarc125-3D</i> {10125} | 3D | BARC125F / BARC125R |
| New | <i>Xbarc128-3D</i> {10125} | 3D | BARC128F / BARC128R |
| New | <i>Xbarc226-3D</i> {10124} | 3D | BARC226F / BARC226R |
| New | <i>Xbarc52-3D</i> {10125} | 3D | BARC52F / BARC52R |
| New | <i>Xbarc68-3D</i> {10125} | 3D | BARC68F / BARC68R |
| New | <i>Xcf193-3D</i> {10125} | 3D | CFD193F / CFD193R |
| New | <i>Xcf62-3D</i> {10125} | 3D | CFD62F / CFD62R |
| New | <i>Xcf71-3D</i> {10125} | 3D | CFD71F / CFD71R |
| New | <i>Xgdm136-3D</i> {10125} | 3D | DMS136F / DMS136R |
| New | <i>Xgdm99-3D</i> {10125} | 3D | DMS99F / DMS99R |
| New | <i>Xgwm191-3D</i> {10125} | 3D | WMS191F / WMS191R |
| New | <i>Xwmc492-3D</i> {10125} | 3D | WMC492F / WMC492R |
| New | <i>Xwmc549-3D</i> {10125} | 3D | WMC549F / WMC549R |
| New | <i>Xwmc552-3D</i> {10125} | 3D | WMC552F / WMC552R |
| New | <i>Xwmc630-3D</i> {10125} | 3D | WMC630F / WMC630R |
| New | <i>Xwmc631-3D</i> {10125} | 3D | WMC631F / WMC631R |
| New | <i>Xwmc656-3D</i> {10125} | 3D | WMC656F / WMC656R |
| New | <i>Xwmc674-3D</i> {10125} | 3D | WMC674F / WMC674R |
| New | <i>Xwmc741-3D</i> {10125} | 3D | WMC741F / WMC741R |

Group 4AS

| | | | |
|------------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc206-4A</i> {10124} | 4AS | BARC206F / BARC206R |
| New | <i>Xbarc1052-4A</i> {10124} | 4AS | BARC1052F / BARC1052R |
| New | <i>Xbarc1137-4A</i> {10124} | 4AS | BARC1137F / BARC1137R |
| New | <i>Xbarc155-4A</i> {10124} | 4AS | BARC155F / BARC155R |
| New | <i>Xbarc224-4A</i> {10124} | 4AS | BARC224F / BARC224R |
| New | <i>Xcfa2256-4A</i> {10126} | 4AS | CFA2256F / CFA2256R |
| New | <i>Xcfa2026-4A</i> {10126} | 4AS | CFA2026F / CFA2026R |
| Add to 7DS, 7AL | <i>Xcfa2174-4A</i> {10126} | 4AS | CFA2174F / CFA2174R |
| Add to 2AL | <i>Xcfa2121-4A</i> {10126} | 4AS | CFA2121F / CFA2121R |
| Change 4A to 4AS | <i>Xcf16-4A</i> {10126} | 4AS | CFD16F / CFD16R |

Group 4AL

| | | | |
|-------------------|------------------------------------|-----|---------------------|
| Change 4AS to 4AL | <i>Xbarc106-4A</i> {10124} {10126} | 4AL | BARC106F / BARC106R |
| Add reference | <i>Xbarc153-4A</i> {10124} | 4AL | BARC153F / BARC153R |
| Add reference | <i>Xbarc170-4A</i> {10124} | 4AL | BARC170F / BARC170R |
| Add reference | <i>Xbarc184-4A</i> {10124} | 4AL | BARC184F / BARC184R |
| Add reference | <i>Xbarc315-4A</i> {10124} | 4AL | BARC315F / BARC315R |
| Add reference | <i>Xbarc327-4A</i> {10124} | 4AL | BARC327F / BARC327R |
| Add reference | <i>Xbarc343-4A</i> {10124} | 4AL | BARC343F / BARC343R |
| Add reference | <i>Xbarc52-4A</i> {10124} | 4AL | BARC52F / BARC52R |
| Add reference | <i>Xbarc70-4A</i> {10124} | 4AL | BARC70F / BARC70R |

| | | | |
|-------------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc78-4A</i> {10124} | 4AL | BARC78F / BARC78R |
| New | <i>Xbarc1047-4A</i> {10124} | 4AL | BARC1047F / BARC1047R |
| Add to 4D | <i>Xcfa2173-4A</i> {10126} | 4AL | CFA2173F / CFA2173R |
| Add to 7DS | <i>Xcf31-4A</i> {10126} | 4AL | CFD31F / CFD31R |
| Change 4AS to 4AL | <i>Xgwm601-4A</i> {10126} | 4AL | WMS601F / WMS601R |
| Add to 7DS | <i>Xgpw1142-4A</i> {10126} | 4AL | GPW1142F / GPW1142R |

Group 4A

| | | | |
|---------------|-----------------------------|----|-----------------------|
| Add reference | <i>Xbarc138-4A</i> {10124} | 4A | BARC138F / BARC138R |
| New | <i>Xbarc1070-4A</i> {10124} | 4A | BARC1070F / BARC1070R |
| New | <i>Xbarc190-4A</i> {10124} | 4A | BARC190F / BARC190R |
| New | <i>Xbarc216-4A</i> {10124} | 4A | BARC216F / BARC216R |
| New | <i>Xbarc233-4A</i> {10124} | 4A | BARC233F / BARC233R |
| New | <i>Xcfa2256-4A</i> {10125} | 4A | CFA2256F / CFA2256R |
| New | <i>Xcf30-4A</i> {10125} | 4A | CFD30F / CFD30R |
| New | <i>Xgwm162-4A</i> {10125} | 4A | WMS162F / WMS162R |
| New | <i>Xgwm44-4A</i> {10125} | 4A | WMS44F / WMS44R |
| New | <i>Xgwm494-4A</i> {10125} | 4A | WMS494F / WMS494R |
| New | <i>Xgwm565-4A</i> {10125} | 4A | WMS565F / WMS565R |
| New | <i>Xwmc15-4A</i> {10125} | 4A | WMC15F / WMC15R |
| New | <i>Xwmc446-4A</i> {10125} | 4A | WMC446F / WMC446R |
| New | <i>Xwmc516-4A</i> {10125} | 4A | WMC516F / WMC516R |
| New | <i>Xwmc597-4A</i> {10125} | 4A | WMC597F / WMC597R |
| New | <i>Xwmc617-4A</i> {10125} | 4A | WMC617F / WMC617R |
| New | <i>Xwmc650-4A</i> {10125} | 4A | WMC650F / WMC650R |
| New | <i>Xwmc680-4A</i> {10125} | 4A | WMC680F / WMC680R |
| New | <i>Xwmc698-4A</i> {10125} | 4A | WMC698F / WMC698R |
| New | <i>Xwmc707-4A</i> {10125} | 4A | WMC707F / WMC707R |
| New | <i>Xwmc718-4A</i> {10125} | 4A | WMC718F / WMC718R |
| New | <i>Xwmc722-4A</i> {10125} | 4A | WMC722F / WMC722R |
| New | <i>Xwmc757-4A</i> {10125} | 4A | WMC757F / WMC757R |
| New | <i>Xwmc760-4A</i> {10125} | 4A | WMC760F / WMC760R |
| New | <i>Xwmc776-4A</i> {10125} | 4A | WMC776F / WMC776R |

Group 4BS

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc193-4B</i> {10124} | 4BS | BARC193F / BARC193R |
| Add reference | <i>Xbarc292-4B</i> {10124} | 4BS | BARC292F / BARC292R |
| New | <i>Xbarc1001-4B</i> {10124} | 4BS | BARC1001F / BARC1001R |
| New | <i>Xbarc1045-4B</i> {10124} | 4BS | BARC1045F / BARC1045R |
| New | <i>Xbarc20-4B</i> {10124} | 4BS | BARC20F / BARC20R |

Group 4BL

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc163-4B</i> {10124} | 4BL | BARC163F / BARC163R |
| Add reference | <i>Xbarc60-4B</i> {10124} | 4BL | BARC60F / BARC60R |
| New | <i>Xbarc1096-4B</i> {10124} | 4BL | BARC1096F / BARC1096R |
| New | <i>Xbarc114-4B</i> {10124} | 4BL | BARC114F / BARC114R |
| New | <i>Xbarc1174-4B</i> {10124} | 4BL | BARC1174F / BARC1174R |
| New | <i>Xbarc199-4B</i> {10124} | 4BL | BARC199F / BARC199R |
| New | <i>Xbarc227-4B</i> {10124} | 4BL | BARC227F / BARC227R |

Group 4B

| | | | |
|-----|-----------------------------|----|-----------------------|
| New | <i>Xbarc10-4B</i> {10125} | 4B | BARC10F / BARC10R |
| New | <i>Xbarc109-4B</i> {10125} | 4B | BARC109F / BARC109R |
| New | <i>Xbarc1142-4B</i> {10124} | 4B | BARC1142F / BARC1142R |
| New | <i>Xbarc25-4B</i> {10125} | 4B | BARC25F / BARC25R |
| New | <i>Xbarc68-4B</i> {10125} | 4B | BARC68F / BARC68R |

| | | | |
|-----|--------------------|----|-------------------|
| New | Xcf2-4B {10125} | 4B | CFD2F / CFD2R |
| New | Xgwm112-4B {10125} | 4B | WMS112F / WMS112R |
| New | Xgwm193-4B {10125} | 4B | WMS193F / WMS193R |
| New | Xgwm261-4B {10125} | 4B | WMS261F / WMS261R |
| New | Xgwm540-4B {10125} | 4B | WMS540F / WMS540R |
| New | Xgwm664-4B {10125} | 4B | WMS664F / WMS664R |
| New | Xwmc16-4B {10125} | 4B | WMC16F / WMC16R |
| New | Xwmc413-4B {10125} | 4B | WMC413F / WMC413R |
| New | Xwmc419-4B {10125} | 4B | WMC419F / WMC419R |
| New | Xwmc546-4B {10125} | 4B | WMC546F / WMC546R |
| New | Xwmc617-4B {10125} | 4B | WMC617F / WMC617R |
| New | Xwmc652-4B {10125} | 4B | WMC652F / WMC652R |
| New | Xwmc657-4B {10125} | 4B | WMC657F / WMC657R |
| New | Xwmc679-4B {10125} | 4B | WMC679F / WMC679R |
| New | Xwmc692-4B {10125} | 4B | WMC692F / WMC692R |
| New | Xwmc695-4B {10125} | 4B | WMC695F / WMC695R |
| New | Xwmc710-4B {10125} | 4B | WMC710F / WMC710R |
| New | Xwmc826-4B {10125} | 4B | WMC826F / WMC826R |

Group 4DS

| | | | |
|---------------|-----------------------|-----|-------------------------|
| Add arm | Xbarc288-4D {10124} | 4DS | BARC288F / BARC288R |
| Add reference | Xbarc217-4D {10124} | 4DS | BARC217F / BARC217R |
| Add reference | Xbarc225.1-4D {10124} | 4DS | BARC225.1F / BARC225.1R |
| Add reference | Xbarc308-4D {10124} | 4DS | BARC308F / BARC308R |
| Add reference | Xbarc334-4D {10124} | 4DS | BARC334F / BARC334R |
| Add reference | Xbarc98-4D {10124} | 4DS | BARC98F / BARC98R |
| New | Xbarc105-4D {10124} | 4DS | BARC105F / BARC105R |
| New | Xbarc1118-4D {10124} | 4DS | BARC1118F / BARC1118R |

Group 4DL

| | | | |
|---------------|-----------------------|-----|-------------------------|
| Add reference | Xbarc48-4D {10124} | 4DL | BARC48F / BARC48R |
| New | Xbarc1069-4D {10124} | 4DL | BARC1069F / BARC1069R |
| New | Xbarc114-4D {10124} | 4DL | BARC114F / BARC114R |
| New | Xbarc1148-4D {10124} | 4DL | BARC1148F / BARC1148R |
| New | Xbarc1183-4D {10124} | 4DL | BARC1183F / BARC1183R |
| New | Xbarc225.2-4D {10124} | 4DL | BARC225.2F / BARC225.2R |
| New | Xbarc93-4D {10124} | 4DL | BARC93F / BARC93R |

Group 4D

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc1145-4D {10124} | 4D | BARC1145F / BARC1145R |
| New | Xbarc27-4D {10124} | 4D | BARC27F / BARC27R |
| New | Xbarc91-4D {10125} | 4D | BARC91F / BARC91R |
| New | Xcf160-4D {10125} | 4D | CFD160F / CFD160R |
| New | Xgwm133-4D {10125} | 4D | WMS133F / WMS133R |
| New | Xgwm193-4D {10125} | 4D | WMS193F / WMS193R |
| New | Xgwm213-4D {10125} | 4D | WMS213F / WMS213R |
| New | Xwmc182-4D {10125} | 4D | WMC182F / WMC182R |
| New | Xwmc33-4D {10125} | 4D | WMC33F / WMC33R |
| New | Xwmc489-4D {10125} | 4D | WMC489F / WMC489R |
| New | Xwmc617-4D {10125} | 4D | WMC617F / WMC617R |
| New | Xwmc622-4D {10125} | 4D | WMC622F / WMC622R |
| New | Xwmc720-4D {10125} | 4D | WMC720F / WMC720R |
| New | Xwmc818-4D {10125} | 4D | WMC818F / WMC818R |
| New | Xwmc825-4D {10125} | 4D | WMC825F / WMC825R |

Group 5AS

| | | | |
|---------------|-----------------------|-----|-------------------------|
| Add reference | Xbarc186.1-5A {10124} | 5AS | BARC186.1F / BARC186.1R |
| Add reference | Xbarc117-5A {10124} | 5AS | BARC117F / BARC117R |
| Add reference | Xbarc122.1-5A {10124} | 5AS | BARC122.1F / BARC122.1R |
| Add reference | Xbarc180-5A {10124} | 5AS | BARC180F / BARC180R |
| Add reference | Xbarc303-5A {10124} | 5AS | BARC303F / BARC303R |
| Add reference | Xbarc316-5A {10124} | 5AS | BARC316F / BARC316R |
| New | Xbarc56-5A {10124} | 5AS | BARC56F / BARC56R |

Group 5AL

| | | | |
|---------------|-----------------------|-----|-------------------------|
| Add reference | Xbarc1-5A {10124} | 5AL | BARC1F / BARC1R |
| Add reference | Xbarc100-5A {10124} | 5AL | BARC100F / BARC100R |
| Add reference | Xbarc141-5A {10124} | 5AL | BARC141F / BARC141R |
| Add reference | Xbarc151-5A {10124} | 5AL | BARC151F / BARC151R |
| Add reference | Xbarc165-5A {10124} | 5AL | BARC165F / BARC165R |
| Add reference | Xbarc197-5A {10124} | 5AL | BARC197F / BARC197R |
| Add reference | Xbarc230-5A {10124} | 5AL | BARC230F / BARC230R |
| Add reference | Xbarc319-5A {10124} | 5AL | BARC319F / BARC319R |
| Add reference | Xbarc330-5A {10124} | 5AL | BARC330F / BARC330R |
| Add reference | Xbarc360-5A {10124} | 5AL | BARC360F / BARC360R |
| Add reference | Xbarc40-5A {10124} | 5AL | BARC40F / BARC40R |
| New | Xbarc1135-5A {10124} | 5AL | BARC1135F / BARC1135R |
| New | Xbarc115-5A {10124} | 5AL | BARC115F / BARC115R |
| New | Xbarc1158-5A {10124} | 5AL | BARC1158F / BARC1158R |
| New | Xbarc1182-5A {10124} | 5AL | BARC1182F / BARC1182R |
| New | Xbarc122.2-5A {10124} | 5AL | BARC122.2F / BARC122.2R |
| New | Xbarc144-5A {10124} | 5AL | BARC144F / BARC144R |
| New | Xbarc155-5A {10124} | 5AL | BARC155F / BARC155R |
| New | Xbarc186.2-5A {10124} | 5AL | BARC186.2F / BARC186.2R |
| New | Xbarc207-5A {10124} | 5AL | BARC207F / BARC207R |
| New | Xbarc92-5A {10124} | 5AL | BARC92F / BARC92R |
| New | Xbarc94-5A {10124} | 5AL | BARC94F / BARC94R |

Group 5A

| | | | |
|-----|---------------------|----|---------------------|
| New | Xbarc10-5A {10125} | 5A | BARC10F / BARC10R |
| New | Xbarc232-5A {10125} | 5A | BARC232F / BARC232R |
| New | Xcfa2104-5A {10125} | 5A | CFA2104F / CFA2104R |
| New | Xcfa2121-5A {10125} | 5A | CFA2121F / CFA2121R |
| New | Xcfa2185-5A {10125} | 5A | CFA2185F / CFA2185R |
| New | Xcfa2250-5A {10125} | 5A | CFA2250F / CFA2250R |
| New | Xcfd2-5A {10125} | 5A | CFD2F / CFD2R |
| New | Xgwm96-5A {10125} | 5A | WMS96F / WMS96R |
| New | Xwmc445-5A {10125} | 5A | WMC445F / WMC445R |
| New | Xwmc446-5A {10125} | 5A | WMC446F / WMC446R |
| New | Xwmc475-5A {10125} | 5A | WMC475F / WMC475R |
| New | Xwmc47-5A {10125} | 5A | WMC47F / WMC47R |
| New | Xwmc492-5A {10125} | 5A | WMC492F / WMC492R |
| New | Xwmc51-5A {10125} | 5A | WMC51F / WMC51R |
| New | Xwmc524-5A {10125} | 5A | WMC524F / WMC524R |
| New | Xwmc577-5A {10125} | 5A | WMC577F / WMC577R |
| New | Xwmc630-5A {10125} | 5A | WMC630F / WMC630R |
| New | Xwmc654-5A {10125} | 5A | WMC654F / WMC654R |
| New | Xwmc705-5A {10125} | 5A | WMC705F / WMC705R |
| New | Xwmc713-5A {10125} | 5A | WMC713F / WMC713R |
| New | Xwmc727-5A {10125} | 5A | WMC727F / WMC727R |
| New | Xwmc752-5A {10125} | 5A | WMC752F / WMC752R |

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|------------------|------------------------------|-----|-------------------------|
| New | <i>Xwmc795-5A</i> {10125} | 5A | WMC795F / WMC795R |
| New | <i>Xwmc805-5A</i> {10125} | 5A | WMC805F / WMC805R |
| Group 5BS | | | |
| Add reference | <i>Xbarc216-5B</i> {10124} | 5BS | BARC216F / BARC216R |
| Add reference | <i>Xbarc32.1-5B</i> {10124} | 5BS | BARC32.1F / BARC32.1R |
| Add reference | <i>Xbarc340-5B</i> {10124} | 5BS | BARC340F / BARC340R |
| Add reference | <i>Xbarc4-5B</i> {10124} | 5BS | BARC4F / BARC4R |
| New | <i>Xbarc1120-5B</i> {10124} | 5BS | BARC1120F / BARC1120R |
| Group 5BL | | | |
| Add reference | <i>Xbarc140-5B</i> {10124} | 5BL | BARC140F / BARC140R |
| Add reference | <i>Xbarc142-5B</i> {10124} | 5BL | BARC142F / BARC142R |
| Add reference | <i>Xbarc156-5B</i> {10124} | 5BL | BARC156F / BARC156R |
| Add reference | <i>Xbarc232-5B</i> {10124} | 5BL | BARC232F / BARC232R |
| Add reference | <i>Xbarc308-5B</i> {10124} | 5BL | BARC308F / BARC308R |
| Add reference | <i>Xbarc59-5B</i> {10124} | 5BL | BARC59F / BARC59R |
| Add reference | <i>Xbarc69-5B</i> {10124} | 5BL | BARC69F / BARC69R |
| Add reference | <i>Xbarc74-5B</i> {10124} | 5BL | BARC74F / BARC74R |
| Add reference | <i>Xbarc89-5B</i> {10124} | 5BL | BARC89F / BARC89R |
| New | <i>Xbarc1032-5B</i> {10124} | 5BL | BARC1032F / BARC1032R |
| New | <i>Xbarc1061-5B</i> {10124} | 5BL | BARC1061F / BARC1061R |
| New | <i>Xbarc11-5B</i> {10124} | 5BL | BARC11F / BARC11R |
| New | <i>Xbarc1172-5B</i> {10124} | 5BL | BARC1172F / BARC1172R |
| New | <i>Xbarc243-5B</i> {10124} | 5BL | BARC243F / BARC243R |
| New | <i>Xbarc32.2-5B</i> {10124} | 5BL | BARC32.2F / BARC32.2R |
| New | <i>Xbarc58-5B</i> {10124} | 5BL | BARC58F / BARC58R |
| New | <i>Xbarc88-5B</i> {10124} | 5BL | BARC88F / BARC88R |
| New | <i>Xfcc1</i> {10207} | 5BL | Probe FCC1 |
| New | <i>Xfcc2</i> {10207} | 5BL | Probe FCC2 |
| New | <i>Xfcc3</i> {10207} | 5BL | Probe FCC3 |
| New | <i>Xfcg1</i> {10207} | 5BL | Probe FCG1 |
| New | <i>Xfcg2</i> {10207} | 5BL | Probe FCG2 |
| New | <i>Xfcg3</i> {10207} | 5BL | Probe FCG3 |
| New | <i>Xfcg4</i> {10207} | 5BL | Probe FCG4 |
| New | <i>Xfcg5</i> {10207} | 5BL | Probe FCG5 |
| New | <i>Xfcg6</i> {10207} | 5BL | Probe FCG6 |
| New | <i>Xfcg7</i> {10207} | 5BL | Probe FCG7 |
| New | <i>Xfcg8</i> {10207} | 5BL | Probe FCG8 |
| New | <i>Xfcg9</i> {10207} | 5BL | Probe FCG9 |
| New | <i>Xfcg10</i> {10207} | 5BL | Probe FCG10 |
| New | <i>Xfcg11</i> {10207} | 5BL | Probe FCG11 |
| New | <i>Xfcg12</i> {10207} | 5BL | Probe FCG12 |
| New | <i>Xfcg13</i> {10207} | 5BL | Probe FCG13 |
| New | <i>Xfcg14</i> {10207} | 5BL | Probe FCG14 |
| New | <i>Xfcg15</i> {10207} | 5BL | Probe FCG15 |
| New | <i>Xfcg16</i> {10207} | 5BL | Probe FCG16 |
| New | <i>Xfcg17</i> {10207} | 5BL | Probe FCG17 |
| New | <i>Xfcg19</i> {10207} | 5BL | Probe FCG19 |
| Group 5B | | | |
| Add reference | <i>Xbarc109-5B</i> {10124} | 5B | BARC109F / BARC109R |
| New | <i>Xbarc21-5B</i> {10125} | 5B | BARC21F / BARC21R |
| New | <i>Xbarc240-5B</i> {10125} | 5B | BARC240F / BARC240R |
| New | <i>Xcfa2121.1-5B</i> {10125} | 5B | CFA2121.1F / CFA2121.1R |
| New | <i>Xcfa2121.2-5B</i> {10125} | 5B | CFA2121.2F / CFA2121.2R |
| New | <i>Xcfd20-5B</i> {10125} | 5B | CFD20F / CFD20R |

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|-----|--------------------|----|-------------------|
| New | Xcf5-5B {10125} | 5B | CFD5F / CFD5R |
| New | Xcf60-5B {10125} | 5B | CFD60F / CFD60R |
| New | Xgdm116-5B {10125} | 5B | DMS116F / DMS116R |
| New | Xgwm133-5B {10125} | 5B | WMS133F / WMS133R |
| New | Xwmc160-5B {10125} | 5B | WMC160F / WMC160R |
| New | Xwmc258-5B {10125} | 5B | WMC258F / WMC258R |
| New | Xwmc274-5B {10125} | 5B | WMC274F / WMC274R |
| New | Xwmc326-5B {10125} | 5B | WMC326F / WMC326R |
| New | Xwmc386-5B {10125} | 5B | WMC386F / WMC386R |
| New | Xwmc405-5B {10125} | 5B | WMC405F / WMC405R |
| New | Xwmc430-5B {10125} | 5B | WMC430F / WMC430R |
| New | Xwmc47-5B {10125} | 5B | WMC47F / WMC47R |
| New | Xwmc616-5B {10125} | 5B | WMC616F / WMC616R |
| New | Xwmc630-5B {10125} | 5B | WMC630F / WMC630R |
| New | Xwmc640-5B {10125} | 5B | WMC640F / WMC640R |
| New | Xwmc682-5B {10125} | 5B | WMC682F / WMC682R |
| New | Xwmc728-5B {10125} | 5B | WMC728F / WMC728R |
| New | Xwmc734-5B {10125} | 5B | WMC734F / WMC734R |
| New | Xwmc740-5B {10125} | 5B | WMC740F / WMC740R |
| New | Xwmc745-5B {10125} | 5B | WMC745F / WMC745R |
| New | Xwmc759-5B {10125} | 5B | WMC759F / WMC759R |
| New | Xwmc773-5B {10125} | 5B | WMC773F / WMC773R |
| New | Xwmc783-5B {10125} | 5B | WMC783F / WMC783R |
| New | Xwmc810-5B {10125} | 5B | WMC810F / WMC810R |
| New | Xwmc813-5B {10125} | 5B | WMC813F / WMC813R |

Group 5DS

| | | | |
|---------------|---------------------|-----|---------------------|
| Add reference | Xbarc130-5D {10124} | 5DS | BARC130F / BARC130R |
| Add reference | Xbarc143-5D {10124} | 5DS | BARC143F / BARC143R |
| Add reference | Xbarc205-5D {10124} | 5DS | BARC205F / BARC205R |

Group 5DL

| | | | |
|---------------|----------------------|-----|-----------------------|
| Add reference | Xbarc110-5D {10124} | 5DL | BARC110F / BARC110R |
| Add reference | Xbarc144-5D {10124} | 5DL | BARC144F / BARC144R |
| Add reference | Xbarc177-5D {10124} | 5DL | BARC177F / BARC177R |
| Add reference | Xbarc286-5D {10124} | 5DL | BARC286F / BARC286R |
| Add reference | Xbarc320-5D {10124} | 5DL | BARC320F / BARC320R |
| Add reference | Xbarc347-5D {10124} | 5DL | BARC347F / BARC347R |
| Add reference | Xbarc361-5D {10124} | 5DL | BARC361F / BARC361R |
| Add reference | Xbarc44-5D {10124} | 5DL | BARC44F / BARC44R |
| Add reference | Xbarc93-5D {10124} | 5DL | BARC93F / BARC93R |
| New | Xbarc1002-5D {10124} | 5DL | BARC1002F / BARC1002R |
| New | Xbarc1018-5D {10124} | 5DL | BARC1018F / BARC1018R |
| New | Xbarc133-5D {10126} | 5DL | BARC133F / BARC133R |
| New | Xbarc322-5D {10124} | 5DL | BARC322F / BARC322R |

Group 5D

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc1097-5D {10124} | 5D | BARC1097F / BARC1097R |
| New | Xbarc1117-5D {10124} | 5D | BARC1117F / BARC1117R |
| New | Xbarc140-5D {10125} | 5D | BARC140F / BARC140R |
| New | Xbarc232-5D {10125} | 5D | BARC232F / BARC232R |
| New | Xbarc234-5D {10124} | 5D | BARC234F / BARC234R |
| New | Xbarc49-5D {10125} | 5D | BARC49F / BARC49R |
| New | Xcf102-5D {10125} | 5D | CFD102F / CFD102R |
| New | Xcf156-5D {10125} | 5D | CFD156F / CFD156R |
| New | Xcf183-5D {10125} | 5D | CFD183F / CFD183R |

| | | | |
|-----|--------------------|----|-------------------|
| New | Xcf266-5D {10125} | 5D | CFD266F / CFD266R |
| New | Xcf283-5D {10125} | 5D | CFD283F / CFD283R |
| New | Xcf37-5D {10125} | 5D | CFD37F / CFD37R |
| New | Xgdm133-5D {10125} | 5D | DMS133F / DMS133R |
| New | Xgdm138-5D {10125} | 5D | DMS138F / DMS138R |
| New | Xgwm159-5D {10125} | 5D | WMS159F / WMS159R |
| New | Xgwm469-5D {10125} | 5D | WMS469F / WMS469R |
| New | Xwmc264-5D {10125} | 5D | WMC264F / WMC264R |
| New | Xwmc405-5D {10125} | 5D | WMC405F / WMC405R |
| New | Xwmc443-5D {10125} | 5D | WMC443F / WMC443R |
| New | Xwmc608-5D {10125} | 5D | WMC608F / WMC608R |
| New | Xwmc446-5A {10125} | 5A | WMC446F / WMC446R |
| New | Xwmc475-5A {10125} | 5A | WMC475F / WMC475R |
| New | Xwmc47-5A {10125} | 5A | WMC47F / WMC47R |
| New | Xwmc492-5A {10125} | 5A | WMC492F / WMC492R |
| New | Xwmc51-5A {10125} | 5A | WMC51F / WMC51R |
| New | Xwmc524-5A {10125} | 5A | WMC524F / WMC524R |
| New | Xwmc577-5A {10125} | 5A | WMC577F / WMC577R |
| New | Xwmc630-5A {10125} | 5A | WMC630F / WMC630R |
| New | Xwmc654-5A {10125} | 5A | WMC654F / WMC654R |
| New | Xwmc705-5A {10125} | 5A | WMC705F / WMC705R |
| New | Xwmc713-5A {10125} | 5A | WMC713F / WMC713R |
| New | Xwmc727-5A {10125} | 5A | WMC727F / WMC727R |
| New | Xwmc752-5A {10125} | 5A | WMC752F / WMC752R |
| New | Xwmc795-5A {10125} | 5A | WMC795F / WMC795R |
| New | Xwmc805-5A {10125} | 5A | WMC805F / WMC805R |
| New | Xwmc630-5D {10125} | 5D | WMC630F / WMC630R |
| New | Xwmc636-5D {10125} | 5D | WMC636F / WMC636R |
| New | Xwmc640-5D {10125} | 5D | WMC640F / WMC640R |
| New | Xwmc765-5D {10125} | 5D | WMC765F / WMC765R |
| New | Xwmc788-5D {10125} | 5D | WMC788F / WMC788R |
| New | Xwmc799-5D {10125} | 5D | WMC799F / WMC799R |
| New | Xwmc805-5D {10125} | 5D | WMC805F / WMC805R |
| New | Xwmc818-5D {10125} | 5D | WMC818F / WMC818R |

Group 6AS

| | | | |
|---------------|--------------------|-----|-------------------|
| Add reference | Xbarc3-6A {10124} | 6AS | BARC3F / BARC3R |
| New | Xbarc48-6A {10125} | 6AS | BARC48F / BARC48R |

Group 6AL

| | | | |
|---------------|----------------------|-----|-----------------------|
| Add arm | Xbarc107-6A {10124} | 6AL | BARC107F / BARC107R |
| Add arm | Xbarc113-6A {10124} | 6AL | BARC113F / BARC113R |
| Add reference | Xbarc104-6A {10124} | 6AL | BARC104F / BARC104R |
| Correct | Xbarc171-6A {10124} | 6AL | BARC171F / BARC171R |
| Correct | Xbarc195-6A {10124} | 6AL | BARC195F / BARC195R |
| Add reference | Xbarc204-6A {10124} | 6AL | BARC204F / BARC204R |
| New | Xbarc1055-6A {10124} | 6AL | BARC1055F / BARC1055R |
| New | Xbarc1165-6A {10124} | 6AL | BARC1165F / BARC1165R |
| New | Xbarc118-6A {10124} | 6AL | BARC118F / BARC118R |
| New | Xbarc165-6A {10126} | 6AL | BARC165F / BARC165R |
| New | Xbarc37-6A {10124} | 6AL | BARC37F / BARC37R |

Group 6A

| | | | |
|-----|---------------------|----|---------------------|
| New | Xbarc103-6A {10124} | 6A | BARC103F / BARC103R |
| New | Xbarc146-6A {10125} | 6A | BARC146F / BARC146R |
| New | Xbarc206-6A {10125} | 6A | BARC206F / BARC206R |

| | | | |
|-----|--------------------|----|-------------------|
| New | Xbarc23-6A {10125} | 6A | BARC23F / BARC23R |
| New | Xcf80-6A {10125} | 6A | CFD80F / CFD80R |
| New | Xgwm132-6A {10125} | 6A | WMS132F / WMS132R |
| New | Xwmc145-6A {10125} | 6A | WMC145F / WMC145R |
| New | Xwmc150-6A {10125} | 6A | WMC150F / WMC150R |
| New | Xwmc182-6A {10125} | 6A | WMC182F / WMC182R |
| New | Xwmc206-6A {10125} | 6A | WMC206F / WMC206R |
| New | Xwmc254-6A {10125} | 6A | WMC254F / WMC254R |
| New | Xwmc398-6A {10125} | 6A | WMC398F / WMC398R |
| New | Xwmc553-6A {10125} | 6A | WMC553F / WMC553R |
| New | Xwmc580-6A {10125} | 6A | WMC580F / WMC580R |
| New | Xwmc59-6A {10125} | 6A | WMC59F / WMC59R |
| New | Xwmc621-6A {10125} | 6A | WMC621F / WMC621R |
| New | Xwmc642-6A {10125} | 6A | WMC642F / WMC642R |
| New | Xwmc672-6A {10125} | 6A | WMC672F / WMC672R |
| New | Xwmc684-6A {10125} | 6A | WMC684F / WMC684R |
| New | Xwmc748-6A {10125} | 6A | WMC748F / WMC748R |
| New | Xwmc753-6A {10125} | 6A | WMC753F / WMC753R |
| New | Xwmc786-6A {10125} | 6A | WMC786F / WMC786R |
| New | Xwmc807-6A {10125} | 6A | WMC807F / WMC807R |

Group 6BS

| | | | |
|-----|-----------------------|-----|-------------------------|
| New | Xbarc1169-6B {10124} | 6BS | BARC1169F / BARC1169R |
| New | Xbarc134.1-6B {10124} | 6BS | BARC134.1F / BARC134.1R |
| New | Xbarc14-6B {10124} | 6BS | BARC14F / BARC14R |
| New | Xbarc198-6B {10124} | 6BS | BARC198F / BARC198R |
| New | Xbarc211-6B {10124} | 6BS | BARC211F / BARC211R |
| New | Xbarc48-6B {10124} | 6BS | BARC48F / BARC48R |

Group 6BL

| | | | |
|---------------|-----------------------|-----|-------------------------|
| Add reference | Xbarc134.2-6B {10124} | 6BL | BARC134.2F / BARC134.2R |
| Add reference | Xbarc178-6B {10124} | 6BL | BARC178F / BARC178R |
| Add reference | Xbarc24-6B {10124} | 6BL | BARC24F / BARC24R |
| Add reference | Xbarc354-6B {10124} | 6BL | BARC354F / BARC354R |
| New | Xbarc180-6B {10124} | 6BL | BARC180F / BARC180R |
| New | Xbarc223-6B {10124} | 6BL | BARC223F / BARC223R |

Group 6B

| | | | |
|---------------|---------------------|----|---------------------|
| Add reference | Xbarc79-6B {10124} | 6B | BARC79F / BARC79R |
| New | Xbarc111-6B {10124} | 6B | BARC111F / BARC111R |
| New | Xbarc112-6B {10124} | 6B | BARC112F / BARC112R |
| New | Xbarc127-6B {10125} | 6B | BARC127F / BARC127R |
| New | Xbarc136-6B {10124} | 6B | BARC136F / BARC136R |
| New | Xbarc146-6B {10125} | 6B | BARC146F / BARC146R |
| New | Xbarc185-6B {10124} | 6B | BARC185F / BARC185R |
| New | Xbarc76-6B {10125} | 6B | BARC76F / BARC76R |
| New | Xcfa2110-6B {10125} | 6B | CFA2110F / CFA2110R |
| New | Xcf1-6B {10125} | 6B | CFD1F / CFD1R |
| New | Xgwm273-6B {10125} | 6B | WMS273F / WMS273R |
| New | Xgwm311-6B {10125} | 6B | WMS311F / WMS311R |
| New | Xgwm705-6B {10125} | 6B | WMS705F / WMS705R |
| New | Xwmc152-6B {10125} | 6B | WMCF / WMC152R |
| New | Xwmc179-6B {10125} | 6B | WMC179F / WMC179R |
| New | Xwmc398-6B {10125} | 6B | WMC398F / WMC398R |
| New | Xwmc419-6B {10125} | 6B | WMC419F / WMC419R |
| New | Xwmc473-6B {10125} | 6B | WMC473F / WMC473R |

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|-----|--------------------|----|-------------------|
| New | Xwmc487-6B {10125} | 6B | WMC487F / WMC487R |
| New | Xwmc539-6B {10125} | 6B | WMC539F / WMC539R |
| New | Xwmc597-6B {10125} | 6B | WMC597F / WMC597R |
| New | Xwmc726-6B {10125} | 6B | WMC726F / WMC726R |
| New | Xwmc737-6B {10125} | 6B | WMC737F / WMC737R |
| New | Xwmc748-6B {10125} | 6B | WMC748F / WMC748R |
| New | Xwmc756-6B {10125} | 6B | WMC756F / WMC756R |
| New | Xwmc786-6B {10125} | 6B | WMC786F / WMC786R |
| New | Xwmc79-6B {10125} | 6B | WMC79F / WMC79R |

Group 6DS

| | | | |
|---------------|---------------------|-----|---------------------|
| Add reference | Xbarc123-6D {10124} | 6DS | BARC123F / BARC123R |
| Add reference | Xbarc173-6D {10124} | 6DS | BARC173F / BARC173R |
| Add reference | Xbarc183-6D {10124} | 6DS | BARC183F / BARC183R |
| Add reference | Xbarc196-6D {10124} | 6DS | BARC196F / BARC196R |

Group 6DL

| | | | |
|---------------|----------------------|-----|-----------------------|
| Add reference | Xbarc1121-6D {10124} | 6DL | BARC1121F / BARC1121R |
| Add referente | Xbarc175-6D {10124} | 6DL | BARC175F / BARC175R |
| Correct | Xbarc202-6D {10124} | 6DL | BARC202F / BARC202R |
| Add referente | Xbarc204-6D {10124} | 6DL | BARC204F / BARC204R |
| Add referente | Xbarc21-6D {10124} | 6DL | BARC21F / BARC21R |
| Correct | Xbarc23.1-6D {10124} | 6DL | BARC23.1F / BARC23.1R |
| Correct | Xbarc23.2-6D {10124} | 6DL | BARC23.2F / BARC23.2R |
| Add referente | Xbarc273-6D {10124} | 6DL | BARC273F / BARC273R |
| New | Xbarc1030-6D {10124} | 6DL | BARC1030F / BARC1030R |
| New | Xbarc146-6D {10124} | 6DL | BARC146F / BARC146R |
| New | Xbarc96-6D {10124} | 6DL | BARC96F / BARC96R |

Group 6D

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc1087-6D {10124} | 6D | BARC1087F / BARC1087R |
| New | Xbarc112-6D {10124} | 6D | BARC112F / BARC112R |
| New | Xbarc1145-6D {10124} | 6D | BARC1145F / BARC1145R |
| New | Xbarc5-6D {10125} | 6D | BARC5F / BARC5R |
| New | Xbarc54-6D {10125} | 6D | BARC54F / BARC54R |
| New | Xcfdl119-6D {10125} | 6D | CFD119F / CFD119R |
| New | Xcfdl-6D {10125} | 6D | CFD1F / CFD1R |
| New | Xcfdl190-6D {10125} | 6D | CFD190F / CFD190R |
| New | Xgwm133-6D {10125} | 6D | WMS133F / WMS133R |
| New | Xwmc469-6D {10125} | 6D | WMC469F / WMC469R |
| New | Xwmc748-6D {10125} | 6D | WMC748F / WMC748R |
| New | Xwmc749-6D {10125} | 6D | WMC749F / WMC749R |
| New | Xwmc753-6D {10125} | 6D | WMC753F / WMC753R |
| New | Xwmc773-6D {10125} | 6D | WMC773F / WMC773R |
| New | Xwmc786-6D {10125} | 6D | WMC786F / WMC786R |
| New | Xwmc822-6D {10125} | 6D | WMC822F / WMC822R |

Group 7AS

| | | | |
|-----|----------------------|-----|-----------------------|
| New | Xbarc1005-7A {10124} | 7AS | BARC1005F / BARC1005R |
| New | Xbarc1025-7A {10124} | 7AS | BARC1025F / BARC1025R |
| New | Xbarc1034-7A {10124} | 7AS | BARC1034F / BARC1034R |
| New | Xbarc105-7A {10126} | 7AS | BARC105F / BARC105R |
| New | Xbarc1088-7A {10124} | 7AS | BARC1088F / BARC1088R |
| New | Xbarc1167-7A {10124} | 7AS | BARC1167F / BARC1167R |
| New | Xbarc127-7A {10124} | 7AS | BARC127F / BARC127R |
| New | Xbarc222-7A {10124} | 7AS | BARC222F / BARC222R |

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|-----|---------------------------|-----|-------------------|
| New | <i>Xbarc64-7A {10124}</i> | 7AS | BARC64F / BARC64R |
|-----|---------------------------|-----|-------------------|

Group 7AL

| | | | |
|-----|----------------------------|-----|---------------------|
| New | <i>Xbarc108-7A {10124}</i> | 7AL | BARC108F / BARC108R |
| New | <i>Xbarc121-7A {10124}</i> | 7AL | BARC121F / BARC121R |
| New | <i>Xbarc192-7A {10124}</i> | 7AL | BARC192F / BARC192R |
| New | <i>Xbarc221-7A {10124}</i> | 7AL | BARC221F / BARC221R |
| New | <i>Xbarc275-7A {10124}</i> | 7AL | BARC275F / BARC275R |
| New | <i>Xbarc29-7A {10124}</i> | 7AL | BARC29F / BARC29R |
| New | <i>Xbarc292-7A {10124}</i> | 7AL | BARC292F / BARC292R |
| New | <i>Xbarc49-7A {10124}</i> | 7AL | BARC49F / BARC49R |

Group 7A

| | | | |
|-----|-----------------------------|----|-----------------------|
| New | <i>Xbarc1004-7A {10124}</i> | 7A | BARC1004F / BARC1004R |
| New | <i>Xbarc103-7A {10124}</i> | 7A | BARC103F / BARC103R |
| New | <i>Xbarc1087-7A {10124}</i> | 7A | BARC1087F / BARC1087R |
| New | <i>Xbarc112-7A {10124}</i> | 7A | BARC112F / BARC112R |
| New | <i>Xbarc1145-7A {10124}</i> | 7A | BARC1145F / BARC1145R |
| New | <i>Xbarc151-7A {10125}</i> | 7A | BARC151F / BARC151R |
| New | <i>Xbarc154-7A {10125}</i> | 7A | BARC154F / BARC154R |
| New | <i>Xbarc157-7A {10124}</i> | 7A | BARC157F / BARC157R |
| New | <i>Xbarc174-7A {10125}</i> | 7A | BARC174F / BARC174R |
| New | <i>Xbarc195-7A {10125}</i> | 7A | BARC195F / BARC195R |
| New | <i>Xbarc23-7A {10125}</i> | 7A | BARC23F / BARC23R |
| New | <i>Xbarc70-7A {10125}</i> | 7A | BARC70F / BARC70R |
| New | <i>Xcf13-7A {10125}</i> | 7A | CFD13F / CFD13R |
| New | <i>Xcf193-7A {10125}</i> | 7A | CFD193F / CFD193R |
| New | <i>Xcf20-7A {10125}</i> | 7A | CFD20F / CFD20R |
| New | <i>Xcf242-7A {10125}</i> | 7A | CFD242F / CFD242R |
| New | <i>Xgwm10-7A {10125}</i> | 7A | WMS10F / WMS10R |
| New | <i>Xgwm4-7A {10125}</i> | 7A | WMS4F / WMS4R |
| New | <i>Xgwm554-7A {10125}</i> | 7A | WMS554F / WMS554R |
| New | <i>Xwmc139-7A {10125}</i> | 7A | WMC139F / WMC139R |
| New | <i>Xwmc179-7A {10125}</i> | 7A | WMC179F / WMC179R |
| New | <i>Xwmc488-7A {10125}</i> | 7A | WMC488F / WMC488R |
| New | <i>Xwmc497-7A {10125}</i> | 7A | WMC497F / WMC497R |
| New | <i>Xwmc525-7A {10125}</i> | 7A | WMC525F / WMC525R |
| New | <i>Xwmc593-7A {10125}</i> | 7A | WMC593F / WMC593R |
| New | <i>Xwmc596-7A {10125}</i> | 7A | WMC596F / WMC596R |
| New | <i>Xwmc603-7A {10125}</i> | 7A | WMC603F / WMC603R |
| New | <i>Xwmc607-7A {10125}</i> | 7A | WMC607F / WMC607R |
| New | <i>Xwmc633-7A {10125}</i> | 7A | WMC633F / WMC633R |
| New | <i>Xwmc646-7A {10125}</i> | 7A | WMC646F / WMC646R |
| New | <i>Xwmc65-7A {10125}</i> | 7A | WMC65F / WMC65R |
| New | <i>Xwmc695-7A {10125}</i> | 7A | WMC695F / WMC695R |
| New | <i>Xwmc790-7A {10125}</i> | 7A | WMC790F / WMC790R |
| New | <i>Xwmc809-7A {10125}</i> | 7A | WMC809F / WMC809R |
| New | <i>Xwmc826-7A {10125}</i> | 7A | WMC826F / WMC826R |

Group 7BS

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add reference | <i>Xbarc65.1-7B {10124}</i> | 7BS | BARC65.1F / BARC65.1R |
| Add reference | <i>Xbarc72-7B {10124}</i> | 7BS | BARC72F / BARC72R |
| Add reference | <i>Xbarc85.1-7B {10124}</i> | 7BS | BARC85.1F / BARC85.1R |
| New | <i>Xbarc231-7B {10124}</i> | 7BS | BARC231F / BARC231R |
| New | <i>Xbarc63-7B {10124}</i> | 7BS | BARC63F / BARC63R |

Group 7BL

| | | | |
|---------------|----------------------|-----|-----------------------|
| Add reference | Xbarc176-7B {10124} | 7BL | BARC176F / BARC176R |
| Add reference | Xbarc182-7B {10124} | 7BL | BARC182F / BARC182R |
| Add reference | Xbarc20-7B {10124} | 7BL | BARC20F / BARC20R |
| Correct | Xbarc255-7B {10124} | 7BL | BARC255F / BARC255R |
| Add reference | Xbarc258-7B {10124} | 7BL | BARC258F / BARC258R |
| Correct | Xbarc267-7B {10124} | 7BL | BARC267F / BARC267R |
| Add reference | Xbarc278-7B {10124} | 7BL | BARC278F / BARC278R |
| Add reference | Xbarc315-7B {10124} | 7BL | BARC315F / BARC315R |
| Add reference | Xbarc340-7B {10124} | 7BL | BARC340F / BARC340R |
| Add reference | Xbarc50-7B {10124} | 7BL | BARC50F / BARC50R |
| Add reference | Xbarc90-7B {10124} | 7BL | BARC90F / BARC90R |
| New | Xbarc1073-7B {10124} | 7BL | BARC1073F / BARC1073R |
| New | Xbarc1181-7B {10124} | 7BL | BARC1181F / BARC1181R |
| New | Xbarc219-7B {10124} | 7BL | BARC219F / BARC219R |
| New | Xbarc32-7B {10124} | 7BL | BARC32F / BARC32R |
| New | Xbarc65.2-7B {10124} | 7BL | BARC65.2F / BARC65.2R |
| New | Xbarc82-7B {10124} | 7BL | BARC82F / BARC82R |
| New | Xbarc85.2-7B {10124} | 7BL | BARC85.2F / BARC85.2R |

Group 7B

| | | | |
|-----|----------------------|----|-----------------------|
| New | Xbarc10-7B {10125} | 7B | BARC10F / BARC10R |
| New | Xbarc1082-7B {10124} | 7B | BARC1082F / BARC1082R |
| New | Xbarc112-7B {10124} | 7B | BARC112F / BARC112R |
| New | Xbarc123-7B {10125} | 7B | BARC123F / BARC123R |
| New | Xbarc255-7B {10124} | 7B | BARC255F / BARC255R |
| New | Xbarc258-7B {10124} | 7B | BARC258F / BARC258R |
| New | Xbarc94-7B {10125} | 7B | BARC94F / BARC94R |
| New | Xbarc95-7B {10125} | 7B | BARC95F / BARC95R |
| New | Xcfa2040-7B {10125} | 7B | CFA2040F / CFA2040R |
| New | Xcfa2106-7B {10125} | 7B | CFA2106F / CFA2106R |
| New | Xcfd22-7B {10125} | 7B | CFD22F / CFD22R |
| New | Xgwm213-7B {10125} | 7B | WMS213F / WMS213R |
| New | Xwmc218-7B {10125} | 7B | WMC218F / WMC218R |
| New | Xwmc426-7B {10125} | 7B | WMC426F / WMC426R |
| New | Xwmc475-7B {10125} | 7B | WMC475F / WMC475R |
| New | Xwmc51-7B {10125} | 7B | WM51CF / WMC51R |
| New | Xwmc546.1-7B {10125} | 7B | WMC546.1F / WMC546.1R |
| New | Xwmc546.2-7B {10125} | 7B | WMC546.2F / WMC546.2R |
| New | Xwmc557-7B {10125} | 7B | WMC557F / WMC557R |
| New | Xwmc581-7B {10125} | 7B | WMC581F / WMC581R |
| New | Xwmc606-7B {10125} | 7B | WMC606F / WMC606R |
| New | Xwmc613-7B {10125} | 7B | WMC613F / WMC613R |
| New | Xwmc653-7B {10125} | 7B | WMC653F / WMC653R |
| New | Xwmc662-7B {10125} | 7B | WMC662F / WMC662R |
| New | Xwmc696-7B {10125} | 7B | WMC696F / WMC696R |
| New | Xwmc723-7B {10125} | 7B | WMC723F / WMC723R |
| New | Xwmc758-7B {10125} | 7B | WMC758F / WMC758R |
| New | Xwmc792-7B {10125} | 7B | WMC792F / WMC792R |

Group 7DS

| | | | |
|---------------|---------------------|-----|---------------------|
| Add reference | Xbarc125-7D {10124} | 7DS | BARC125F / BARC125R |
| Add reference | Xbarc126-7D {10124} | 7DS | BARC126F / BARC126R |
| Add reference | Xbarc154-7D {10124} | 7DS | BARC154F / BARC154R |
| Add reference | Xbarc214-7D {10124} | 7DS | BARC214F / BARC214R |
| Add reference | Xbarc352-7D {10124} | 7DS | BARC352F / BARC352R |

| | | | |
|-----|-----------------------------|-----|-----------------------|
| New | <i>Xbarc1033-7D</i> {10124} | 7DS | BARC1033F / BARC1033R |
|-----|-----------------------------|-----|-----------------------|

Group 7DL

| | | | |
|---------------|-----------------------------|-----|-----------------------|
| Add arm | <i>Xbarc26-7D</i> {10124} | 7DL | BARC26F / BARC26R |
| Add reference | <i>Xbarc105-7D</i> {10124} | 7DL | BARC105F / BARC105R |
| Add reference | <i>Xbarc111-7D</i> {10124} | 7DL | BARC111F / BARC111R |
| Add reference | <i>Xbarc121-7D</i> {10124} | 7DL | BARC121F / BARC121R |
| Add reference | <i>Xbarc172-7D</i> {10124} | 7DL | BARC172F / BARC172R |
| Add reference | <i>Xbarc235-7D</i> {10124} | 7DL | BARC235F / BARC235R |
| Add reference | <i>Xbarc53-7D</i> {10124} | 7DL | BARC53F / BARC53R |
| Add reference | <i>Xbarc76-7D</i> {10124} | 7DL | BARC76F / BARC76R |
| New | <i>Xbarc1046-7D</i> {10124} | 7DL | BARC1046F / BARC1046R |
| New | <i>Xbarc1075-7D</i> {10124} | 7DL | BARC1075F / BARC1075R |
| New | <i>Xbarc97-7D</i> {10124} | 7DL | BARC97F / BARC97R |

Group 7D

| | | | |
|-----|----------------------------|----|---------------------|
| New | <i>Xbarc128-7D</i> {10125} | 7D | BARC128F / BARC128R |
| New | <i>Xbarc184-7D</i> {10125} | 7D | BARC184F / BARC184R |
| New | <i>Xbarc235-7D</i> {10124} | 7D | BARC235F / BARC235R |
| New | <i>Xbarc5-7D</i> {10125} | 7D | BARC5F / BARC5R |
| New | <i>Xbarc70-7D</i> {10125} | 7D | BARC70F / BARC70R |
| New | <i>Xbarc87-7D</i> {10125} | 7D | BARC87F / BARC87R |
| New | <i>Xcfa2040-7D</i> {10125} | 7D | CFA2040F / CFA2040R |
| New | <i>Xcfd175-7D</i> {10125} | 7D | CFD175F / CFD175R |
| New | <i>Xcfd193-7D</i> {10125} | 7D | CFD193F / CFD193R |
| New | <i>Xcfd2.1-7D</i> {10125} | 7D | CFD2.1F / CFD2.1R |
| New | <i>Xcfd26-7D</i> {10125} | 7D | CFD26F / CFD26R |
| New | <i>Xcfd30-7D</i> {10125} | 7D | CFD30F / CFD30R |
| New | <i>Xgdm145-7D</i> {10125} | 7D | DMS145F / DMS145R |
| New | <i>Xgdm88-7D</i> {10125} | 7D | DMS88F / DMS88 |
| New | <i>Xgwm473-7D</i> {10125} | 7D | WMS473F / WMS473R |
| New | <i>Xwmc166-7D</i> {10125} | 7D | WMC166F / WMC166R |
| New | <i>Xwmc182-7D</i> {10125} | 7D | WMC182F / WMC182R |
| New | <i>Xwmc221-7D</i> {10125} | 7D | WMC221F / WMC221R |
| New | <i>Xwmc438-7D</i> {10125} | 7D | WMC438F / WMC438R |
| New | <i>Xwmc450-7D</i> {10125} | 7D | WMC450F / WMC450R |
| New | <i>Xwmc463-7D</i> {10125} | 7D | WMC463F / WMC463R |
| New | <i>Xwmc488-7D</i> {10125} | 7D | WMC488F / WMC488R |
| New | <i>Xwmc489-7D</i> {10125} | 7D | WMC489F / WMC489R |
| New | <i>Xwmc506-7D</i> {10125} | 7D | WMC506F / WMC506R |
| New | <i>Xwmc606-7D</i> {10125} | 7D | WMC606F / WMC606R |
| New | <i>Xwmc629-7D</i> {10125} | 7D | WMC629F / WMC629R |
| New | <i>Xwmc630-7D</i> {10125} | 7D | WMC630F / WMC630R |
| New | <i>Xwmc634-7D</i> {10125} | 7D | WMC634F / WMC634R |
| New | <i>Xwmc646-7D</i> {10125} | 7D | WMC646F / WMC646R |
| New | <i>Xwmc653-7D</i> {10125} | 7D | WMC653F / WMC653R |
| New | <i>Xwmc671-7D</i> {10125} | 7D | WMC671F / WMC671R |
| New | <i>Xwmc698-7D</i> {10125} | 7D | WMC698F / WMC698R |
| New | <i>Xwmc702-7D</i> {10125} | 7D | WMC702F / WMC702R |
| New | <i>Xwmc797-7D</i> {10125} | 7D | WMC797F / WMC797R |
| New | <i>Xwmc824-7D</i> {10125} | 7D | WMC824F / WMC824R |
| New | <i>Xwmc827-7D</i> {10125} | 7D | WMC827F / WMC827R |

Morphological and Physiological Traits**6. Awnedness****6.1. Dominant Inhibitors****6.1.2. Tipped 1***BI.***ma:** Terminally located {10189}.**9. Brittle Rachis (revised section)***Br-A1* {10182}. *Br2* {0130}.*Br-B1* {10182}. *Br3* {0130}.*Br-D1* {10182}. *Br1* {9970}. **v:** After the present entry, add: 'KU510, K/U511, KU515 {10182}'.**10. Boron Tolerance**

Add at end of section: In contrast to tolerance, boron efficiency was studied in {10135}. Monogenic segregation occurred in Bonza (B inefficient) / SW 41 (moderately B inefficient) and SW 41 / Fang 60 (B efficient). Two genes, designated *Bod1* and *Bod2* segregated in Bonza / Fang 60.

20. Flowering time

Winter wheat cross, Arina (149 days) / Forno (150 days): Six QTL detected over six environments, the three most important, all from Arina, were in chromosomes 6DL ($R^2 = 16\%$), 3DL ($R^2 = 14\%$) and 7BL ($R^2 = 13\%$); three others in 2AL, 5BL, and 6DL were from Forno (10172).

27. Red (brown/bronze) glumes

Rg2. **v:** Synthetic Hexaploid-11 **ma:** *Xpsp2000-ID* – 9.3 cM – *Rg2* – 21.2 cM – *Xgwm106-ID* {10128}.

33. Hairy Glume

Hg.. **ma:** Tel..... *Hg/BG605525* – 3.8 cM – *Xpsp2999 (Glu3)-IA* {10193}.

39.3 Reduced Height: QTL

Add at end of section:

Arina (120.5cm) / Forno (103 cm): 5 QTLs in 1AS, 1BL, 2AL, 5AL, and 6DL (R^2 values, 8–23 %) of which only one, *QHtfal.1BL*, originated in Forno {10172}.

Rht-B1IC12196 [{10144}]. *Rht-B1^{IC12196}* {10144}. **tv:** *T. turgidum* subsp. *polonicum* IC12196 (10144).

43. Lack of Ligules

Revise section as follows: The liguleless character is controlled by complementary recessive genes in hexaploid wheat {077, 738, 942} and by a single recessive in tetraploid wheat {047, 050, 939, 10133}. One gene at the tetraploid level is allelic with one of those in the hexaploid {939, 10133}. Evidence for orthology of *lg1* and *lg2* with *lg* of rice {170}, *lg1* of maize {004}, *li* of barley {1155}, and *al* of rye was presented in {725}. **al:** Imperial rye chromosome 2R restored the liguled condition to a liguleless CS derivative {939}.

lg1{047}. 2B {942}. **i:** ANK33 = Novosibirskaya 67*10 / K59990 {}.
v: Eligulate W1342 *lg2 lg3* {942, 10133}; K31289 {10133} K59990 {};
 K53660 {10133}; Liguleless partial backcross derivative of CS{939}.
tv: K17769 {10133}; K17784 {10133}.

| | | |
|---------------------|-------------|---|
| <i>lg2.</i> | 2D{942}. | i: ANK33 = Novosibirskaya 67*10 / K59990 {}. v: Eligulate W1342 <i>lg1 lg3</i> {942, 10133}; Liguleless partial backcross derivative of CS{939}. tv: K17769 {10133}; K17784 {10133}. |
| <i>lg3</i> {10133}. | 2A {10133}. | i: ANK33 = Novosibirskaya 67*10 / K59990 {}. v: Present in all hexaploid cultivars. |

Genotypes of selected tetraploid wheat {10133}:

Lg1Lg1 Lg3Lg3: *T. turgidum* subsp. *durum* Ldn-dic DS 2A: *T. turgidum* subsp. *dicoccum* Khapli; Vernal; *T. turgidum* subsp. *dicoccoides* Israel A; MG4343.

Lg1Lg1 lg3lg3: *T. turgidum* subsp. *durum*: Altaiskaya Niva; Castelpoziano; Langdon; Ldn-GB DS 2B; Golden Ball; Modoc; PI 349056.

lg1lg1 Lg3Lg3: None identified.

Phenol Colour Reaction of Kernels

Wheat genotypes vary in response when caryopses are treated with weak solutions of phenol, a dark colour response being indicative of a positive response. This response is believed to be related to the action of tyrosinase. There seems to a genetic relationship with polyphenol oxidase activity which causes a darkening of flour, pasta and noodle products (see also 56. Polyphenol Oxidase (PPO) activity).

| | | |
|-----------------------|------------------------------------|---|
| <i>Tc1</i> {10130}. | 2AL {10131,10130}. | su: Various substitutions of chromosomes 2A into CS {10131}. sutv: Langdon* / dicoccoides 2A {10130}. tv: Golden Ball {10130}. |
| <i>Tc2</i> {10130}. | 2BL {10130}. | sutv: Langdon* / Golden Ball 2B {10130}. tv: Golden Ball {10130} |
| <i>Tc3</i> [{10131}]. | <i>Tc</i> (10131). 2DL {10131}. | su: CS / *Timstein 2D {10131}. v: Chinese Spring (intermediate response) {10130}. Timstein <i>Tc1</i> {10131}. sutv: Langdon* / CS 2D(2A); Langdon* / CS 2B(2D) {10130}. <i>T. turgidum</i> subsp. <i>dicoccoides</i> Israel A {10130}. Lines with a negative phenol color reaction. v: Timstein {10131}. tv: Cocorit 71 {10130}; Langdon {10130}. |

55. Pollen Killer

Add to section:

Kato & Maeda {10164} reported both partial pollen and seed sterility in crosses involving certain landraces and Chinese Spring. They attributed sterility to recessive alleles of three complementary genes. The genes were designated *Ki2*, *Ki3*, and *Ki4* (10164), but the relationship of *Ki3* to the earlier designated *Ki* was not established. Some genotypes:

| | |
|---------------------|---|
| <i>Ki2 Ki3 Ki4.</i> | v: Aka Kawa Aka {10165}; Hope {10165}; Marquis {10165}; Red Russian {10165}. |
| <i>ki2 Ki3 Ki4.</i> | v: Akadaruma {10165}; Canthatch {10165}; Norin 61 {10165}; Pakistani Landrace IL159 {10164}. |
| <i>Ki2 ki3 Ki4.</i> | v: Gabo {10165}; Thatcher {10165}; Timstein {10165}; Zlatiborka {10165}. |
| <i>Ki2 Ki3 ki4.</i> | v: Kagoshima {10165}; Komugi Jingoro {10165}; Sakobore {10165}. |
| <i>ki2 ki3 Ki4.</i> | v: Finnish Landrace WAG4339 {10165}; Hungarian Landrace WAG4458 {10165}; Novosadska Jara {10165}. |
| <i>ki2 Ki3 ki4.</i> | v: Chinese Spring {10165}; Eshima Shinriki {10165}; Ethiopian Landrace IL70 {10164}; Norin 26 {10165}. |
| <i>Ki2 ki3 ki4.</i> | v: Cadet {10165}; Iraqi Landrace IL171 {10165}; Rex {10165}. |

56. Polyphenol Oxidase (PPO) Activity

Add at end of first paragraph: An orthologous series of genes affecting PPO activity in both common wheat and durum was proposed in {10149}. See also, Phenol Colour Reaction of Kernels.

Reaction to Black-Point of Grain

Black-point is a dark discoloration of the embryo region of the kernels. Whereas black-point is often attributed to infection by a number of fungi, the presence of such fungi may be a consequence of saprophytic colonization of affected tissues rather than the cause (see {10148} for references).

QTL: Sunco / Tasman DH population: QTL located in chromosomes 2B (15 % of phenotypic variation), 3D, 4A (from Sunco) and 1D, 5A. and 7AS (from Tasman {10148}). The 2B gene was associated with the presence of *Sr36* {10148}. Cascades / AUS1408 DH population: QTL from Cascades located in chromosomes 2D (5c M from *Xgwm484-2D*, 18 % of phenotypic variation), 2A (13 %), and 7As (12 %) {10148}.

58. Response to Photoperiod

Ppd-B1. **ma:** Gene order: *Xwhs2002-2B/Xgwm257-2B – Ppd-B1 – Xgwm7B*. Actual linkage values varied between crosses (10129).

61. Response to Vernalization

Vrn-A1a. Under i: Change ‘Triple Dirk’ to ‘Triple Dirk D (GenBank AY616458 & AY616459 {10198}) {1171,1172}’.

Under v2: Insert ‘Triple Dirk *Vrn-B1a* {1173}’.

Vrn-A1b {10198}. **v:** Marquis PI94548 (GenBank AY616461) {10198}.

tv: *T. turgidum* var. *durum* ST36 {10198}.

Vrn-A1c {10198}. This allele has a promoter similar to recessive *vrn-A1a* from Triple Dirk C {10198} and a large deletion in intron 1 {10202}.

v: IL162 {10198}; IL369 {10198} has a 5.5kb deletion in *Vrn-A1* intron 1 {10202}.

tv: Aldura PI 486150 {10202}; Leeds CI 13796 {10202}; Mexicali 75 PI 433760 {10202}; Minos CI 15161 {10202}. Most durum genotypes have a 7.2-kb deletion in intron 1 {10202}.

Vrn-A1d {10198}. **tv:** *T. turgidum* subsp. *dicoccoides* Amrim 34 {10198}; FA15 (GenBank AY616462) {10198}; Iraq 8736 {10198}; Tabigha 15 {10198}.

Vrn-A1e {10198}. **tv:** *T. turgidum* var. *dicoccum* ST27 = Vernal (GenBank AY616463) {10198}.

Vrn-B1. Add as the second note following the ma: entry: ‘All common wheat genotypes carrying *Vrn-B1a* studied so far have a 6.8kb deletion in intron 1 (Triple Dirk B, Bersee, Festiguay, Mara, Milturum, Noe, Spica) {10202}.’

Vrn-D1. Add as a note following the v2 entry: ‘All the common wheat genotypes carrying *Vrn-D1a* studied so far have 4.2-kb deletion in intron 1 (Triple Dirk E, Chinese Spring, Norin 61, Shinchunaga, Shirasagi Komugi, Ushio Komugi) {10202}.’

69. Tiller Inhibition

tin1. 1A {10193}. **v:** Banks + *tin* {10193}; Oligoculm 390 {10193}; Uniculm 492 {10193}.

ma: *Xpsp2999(Glu3)-1A-* – 3.9 cM – *tin1/Xgwm136-1A* – 2.4 cM – *Xwhs179-1A* {10193}; the 350-bp allele of *Xgwm136-1A* was diagnostic of *tin1* {10193}.

Stem solidness

Qsst.msub-3BL 3BL{10206}. **v:** Rampart PI 593889 {10306}.

ma: Linked to microsatellite markers *Xgwm247-3B*, *Xgwm340-3B*, and *Xgwm547-3B*. These markers explained 76 % of the total variation for stem solidness in Rampart / Jerry {10206}.

72. Change to Yield and Yield Components**72.4. Change to Grain yield**

QYld.ndsu-5B [QGy.ndsu-5B {10161}]. v: LDN (DIC5B) / LDN, contributed by LDN {10161}.

{10161}].

ma: Mapped to the *Xbcd1030-5B – Xgwm604-5B* interval {10161}.

74.1. Grain protein content

QGpc.ndsu-5B.1 5B {10161}. v: LDN (DIC5B) / LDN, contributed by DIC5B {10161}.

{10161}.

ma: Nearest marker, *Xgwm604-5B* {10161}.

QGpc.ndsu-5B.2 5B {10161}. v: LDN (DIC5B) / LDN, contributed by DIC5B {10161}.

{10161}.

ma: Nearest marker, *Xabc310-5B* {10161}.

QGpc.ndsu-5B.3 5B {10161}. v: LDN (DIC5B) / LDN, contributed by DIC5B {10161}.

{10161}.

ma: Nearest marker, *Xwg909-5B* {10161}.

74.5.6 Waxy proteins

Wx-A1f Null allele. v: Turkey-124 {10187}; Turkey 140 {10187}; Turkey 171 {10187}; Turkey 280 {10187}.

Lines with this allele produce a PCR product with a 173-bp insertion in an exon {10187}.

74.5.8. Puroindolines and grain softness proteins

Pina-D1.

v2: Delete Fortuna and Glenman from this group.

Pina-D1b *Pina-D1c* [{10168}]. {10168}.

v1: Sanyuehuang, Guangtouxiaomai, Xiaoyuhua, Chengduguangtou, and Baikezaomai Chinese landraces {10208}.

v2: Fortuna (USA) *Pinb-D1a* {10168}; Glenman *Pinb-D1a* {10168}.

Pina-D1l has a C deletion leading to an open reading frame shift and premature stop codon; PINA null, hard kernel texture {10208}.

Pina-D1m {10208}. v: Hongheshang {10208}.

C-to-T substitution : Proline-35 to serine ; hard kernel texture {10208}.

Pina-D1n {10208}. v: Xianmai, Zhuantoubaike, Baimangchun, Yazuizi, Yazuixiaomai Chinese landraces {10208}.

G-to-A substitution : Tryptophan-43 to stop codon; PINA null, hard kernel texture {10208}.

Pinb-D1.

Pinb-D1r *Pinb-D1h* . [{10209}]. {10209} v: Hyb65 (NCBI AJ619022) {10209}.

G insertion : open reading frame shift and premature stop codon; hard kernel texture {10209}.

Pinb-D1s {10209}. v: NI5439 (NCBI AJ619021) {10209}.

G insertion as in *Pinb-D1r* and an A-to-G substitution; hard kernel texture {10209}.

Pinb-D1t {10208}. v: Guangtouxianmai {10208}; Hongmai {10208}.

G-to-C substitution: Glycine-47 to arginine; hard kernel texture {10208}.

Pathogenic Disease/Pest Reaction**75. Reaction to Barley Yellow Dwarf Virus**

Add: Cereal Yellow Dwarf Virus.

Bdv2. Insert note: Derived from tissue culture.

v: Mackellar = LH64C {10177}.

Derived by *ph1*-induced recombination.

v: Yw243, Yw443, Yw642 and Yw1029 {see 10177}.

ma: Add: Two RGAP and one RAPD markers developed for the Yw series also effective for at least TC14 {10177}.

Bdv3 {10159}. Derived from *Th. intermedium*, cv. Ohae {10158}. T7DS·7DL-7E {10157}

v: P961341 PI 634825 {10157}.

ad: P107 {10159}.

su: P29 (7D{7E}) {10156}.

76. Reaction to *Blumeria tritici*

As a second line add:

'Resistance genes and their molecular associations are reviewed in {10141}'.

76.1. Designated genes for resistance

Pm3h {10212}.

v: Abessi {10212,10199}

ma: tel.... *Pm3h* - 3.7 cM - *Xgwm905-1A* {10199}.

Pm3i {10212}.

v: N324 {10199}

ma: tel.... *Pm3i* - 7.2 cM - *Xgwm905-1A* {10199}.

Pm3j {10212}.

v: Gus 122 {10199}

ma: tel.... *Pm3j* - 1.2 cM - *Xgwm905-1A* {10199}.

Seven variants of *Xgwm905-1A* were found among standard lines with the 10 *Pm3* resistance alleles {10199}.

Pm4a.

v: Yangmai 10 {10176}; Yangmai 11 (10176).

ma: Change last part of last sentence to: ';' *Xbcd1231-2A* was converted to a STS marker {0069;10176} and to a *Pm4a*-specific dominant PCR marker {10176}. *Xgwm356-2A* - 4.8 cM - *Pm4a* {10176}.

Pm17.

ma: *Pm17* - 7.8 cM - *Xmwg68-1R* - 10.9 cM - *Sec-1* in 1RS {10167}.

Pm31 [{0301}]. Modify or add as required:

mlG {0301}. 6AL {0301}.

ma: cent.... *Pm31* - 0.6cM - *Xpsp3029.1* - 2.5 cM - *Xpsp3071-6A* {0301}.

Pm21.

Add note at end of section: Three lines, Pm97033, Pm97034, and Pm07035, with a 6DL.6VS translocation were developed from a different source of *H. villosa* {10194}. These may carry *Pm21*.

Pm33 {10205}. *PmPS5B* {10205}. 2BL {10205}.

v: F₃ line Am9 // 3* Laizhou 953 {10205}.

v2: Am9 = *T. turgidum* subsp. *carthlicum* PS5 / *Ae. umbellulata* Y39 {10205}.

tv2: *T. turgidum* subsp. *carthlicum* PS5 *PmPS5A* {10205}.

mlRd30 (10175). Recessive.

7AL (10175).

v: RD30 {10175}. TA2682c {10175}.

ma: *Xgwm344-7A* - 1.8 cM - *mlRD30* - 2.3 cM - *Xksuh9-7A* {10175};

TA2682c carries a second dominant gene located in chromosome 1A {10175}.

MIZec {10127}. 2BL {10127}.

tv: *T. turgidum* subsp. *dicoccoides* Mo49 {10127}.

v: Zecoi 1 = Ralle*3 / *T. turgidum* subsp. *dicoccoides* {10127}.

ma: Distally located in chromosome 2BL {10127}.

To 'Genotype lists: add to Chinese wheats {...,10201}'.

78. Reaction to *Diuraphis noxia*

Dn4.

ma: *Xgwm106-1D* - 5.9 cM - *Dn4* - 9.2 cM - *Xgwm337-1D* {10128}.

Dn7.

v: 94M370 {10188}.

ma: *Xbcd1434-1R* - 1.4 cM - *Dn7* - 7.4 cM - *Xksud14-1R* {10188}.

Dn1881 {10145}. 7BS {10145}.

tv: Line 1881 {10145}.

ma: *Xgwm46-7BS* - 10.1 cM - *Dn1881* - 12.8 cM - *Xgwm333-7BL* {10145}.

QTL: QTls for antixenosis were associated with *Xpsr687-7D* (7DS) and *Xgwm437-7D* (7DL) in CS / CS (Synthetic 7D) {10136}. Separate antibiotic effects were demonstrated for the same chromosome {10136}.

79. Reaction to *Fusarium spp.***79.1.**

Insert after Patterson / Fundulea

Arina (R) / Forno (S): Three QTL, *QFhs.fal-6DL* ($R^2 = 22\%$), *QFhs.fal-5BL.1* (in Forno, $R^2 = 14\%$), and *QFhs.fal.4AL* ($R^2 = 10\%$), and five minor QTL in 2AL, 3AL, 3BL, 3DS, and 5DL were detected (10172).

Frontana (R) / Remus (S): Major QTL in chromosomes 3AL (*Xgwm270-3AL – Xdupw227-3A* region) and 5A (*Xgwm129-5A – Xbarc-5A* region) accounted for 16 % and 9 % of the phenotypic variation (mainly type-1 resistance), respectively, over 3 years (10174).

Nanda2419 (S) / Wangshuibai (R): eight QTL were identified; those with large effects were associated with *Xgwm533-3B.3 – Xgwm533-3B.1* (W), *Xwmc539-6B* (W), and *Xs1021m-2B – Xgwm47-2B* {10190}.

Wangshuibai (R)/ Wheaton (S): QTL located in chromosomes 3BS (*Xbarc147-3B*, $R^2 = 37\%$ & *Xbarc344-3B*, $R^2 = 7\%$), 7AL (*Xwms1083-7A*, $R^2 = 10\%$), and 1BL (*Xwms759-1B*, $R^2 = 12\%$) {10200}.

Insert at end of section:

Haplotype diversity among a large number of FHB resistant and susceptible (mainly Canadian) germplasms indicated similarities in Asian, Brazilian and other materials (10173). Brazilian cv. Maringa was more similar to Asian than to other Brazilian lines (10173).

80. Reaction to *Heterodera avenae*

Cre1. v: Chara {10163}; Mira {10163}; Mitre {10163}.

82. Reaction to *Mayetiola destructor*

H32 {10137}. 3DL {10137}. v: Synthetic W7984 {10137}.
ma: *Xgwm3-3D – H32 – XksuE14-3D* {10137}.

84. Reaction to *Mycosphaerella graminicola*

Stb4. 7DS {10140}. ma: *Stb4 – 0.7 cM – XgwmIII-7D* {10140}.

Add to existing comment: Genetic analysis of Tadinia indicated single gene segregation (assumed to be *Stb4*) with a Californian culture but a different single gene segregation with South American isolates {10140}.

QTL: ITMI Population: Three QTL, *QStb.ipk-1DS*, *QStb.ipk-2DS* and *QStb.ipk-6DS* conferred seedling-stage resistance to two isolates, whereas two QTL *QStb.ipk-3DL* and *QStb.ipk-7BL* conferred separate adult-stage resistances to each isolate {10151}.

86. Reaction to *Phaeophaeria nodorum*

SnbTM. Add reference {10210}. v: Red Chief {10210}, Hadden {10210}, Missouri Queen {10210}, Cooker 76-35 {10210}, 81IWWMN 2095 {10210}, 86ISMN 2137 {10210}. Allelism of the hexaploid wheat gene and the *T. timopheevii SnbTM* is suspected but not confirmed.

86.1 Add to QTL:

A QTL, *QSnl.ihar-6A-6AL*, identified in DH lines of Alba (R) / Begra (S) accounted for 36% of the phenotypic variance in disease severity and 14% of the variance in incubation period (10143).

87. Reaction to *Puccinia graminis*

Sr2. ma: STMs for the *Xgwm533-3B* locus had increased specificity as markers for *Sr2* {10142}.
Sr27. Enter the reference number '10162' at three {} positions under 3A and one {} position under 3B.

88. Reaction to *Puccinia striiformis*

Yr1. v2: Savannah *Yr2 Yr5 Yr9 Yr32* {10032}.

| | |
|------------------------------------|--|
| <i>Yr3.</i> | v2: Savannah <i>Yr1 Yr2 Yr9 Yr32</i> {10016}. Senat <i>Yr32</i> {10016}. |
| <i>Yr9.</i> | v2: Savannah <i>Yr1 Yr2 Yr3 Yr17</i> {10016}. Kauz and derivatives, Bakhtawar 94, WH542, Memof, Basribey 95, Seyhan 95 <i>Yr18 Yr27</i> {10160}. |
| <i>Yr17.</i> | v2: Savannah <i>Yr1 Yr2 Yr3 Yr32</i> {10016}. |
| <i>Yr18.</i> | v2: Kauz and derivatives, Bakhtawar 94, WH542, Memof, Basribey 95, Seyhan 95 <i>Yr9 Yr27</i> {10160}. |
| <i>Yr27 Change {953} to {928}.</i> | v1: Add: Attila {928}; McMurachy {928}; Inquilab 91 {928}; Kauz {928}; Opata 85 {928}; PWB343 {928}. v2: Kauz and derivatives, Bakhtawar 94, WH542, Memof, Basribey 95, Seyhan 95 <i>Yr9 Yr18</i> {10160}. ma: When analysed as a QTL, variation associated with the <i>Sr27</i> locus was associated with RFLP markers <i>Xcdol52-2B</i> and <i>Xcdol405-2B</i> {928}. Delete the comment starting with 'Note'. |
| <i>Yr32.</i> | <i>YrCV</i> {1430}. Correct chromosome location to 2AL {10016}. i: Tres / 6* Avocet S (10016). v: Anouska {1430}; Tres (10016). v2: Savannah <i>Yr1 Yr2 Yr3 Yr4 Yr17</i> {10016}. Senat <i>Yr3</i> {10016}. ma: <i>Xwmc198-2A</i> – 2 cM – <i>Yr32</i> {10016}. <i>Yr32</i> was co-incident with one AFLP marker {10016}. <i>YrS8</i> {10204}. 6BS {10203}. v: 98M71 = AUS 91388 = <i>T. turgidum</i> subsp. <i>dicoccoides</i> 479 / 7*CS {10204}. tv: <i>T. turgidum</i> subsp. <i>dicoccoides</i> 479 {10204}. |
| <i>Yr35</i> {10203}. | Adult plant resistance. 6BS {10138}. i: Yecora Rojo NIL PI 638740 {10138}. v: Glupro {10138}. itv: UCI113 NIL PI 638741 {10138}. tv: RSL#65 {623,10138}; <i>T. turgidum</i> subsp. <i>dicoccoides</i> FA-15 {10138}. ma: <i>Yr36</i> is between <i>Xucw74-6B</i> and <i>Xucw77-6B</i> and 3-7cM proximal to <i>Nor-B2</i> {10138}. <i>Yr36</i> is closely linked to the high grain protein locus of <i>T. turgidum</i> subsp. <i>dicoccoides</i> FA-15 {10138}. |
| <i>Yr36</i> {10138}. | Derived from <i>Ae. kotschyii</i> . 2DL {10139}. v: Line S14 {10139}. ad: Line 8078 {10139}. al: <i>Ae. kotschyii</i> 617 {10139}. |
| <i>Yr37</i> {10139}. | |

88.3. QTL

Otane (R) / Tiritea (S) DH population: QTL in 7DS (probably *Yr18*), 5DL (from Otane), and 7BL (Tiritea) {10150}. Interval mapping of 7DS indicated that the presumed *Yr18* was 7cM from *Xgwm44-7D* {10150}. Kariega / Avocet S DH population. Two QTL *QYr.sgi-7D* (probably *Yr18*) and *QYr.sgi.2B.I* accounted for 29 and 30 %, respectively, of the phenotypic variation for stripe rust response. The nearest marker to the latter was *Xgwm148-2B* {10184}.

89. Reaction to *Puccinia triticina*

| | |
|---------------|--|
| <i>Lr1.</i> | dv: Several <i>Ae. tauschii</i> accessions {10191}. ma: Terminally located {10189}. In <i>Ae. tauschii</i> recombination in the region was 5-10X that in common wheat, gene order <i>Xpsr567-5D – Lr1 – Xabc718-5D</i> {10191}. |
| <i>Lr2a.</i> | v2: Ck 9835 <i>Lr9</i> {10146}. Ck 9663 <i>Lr9 Lr10</i> {10146}. |
| <i>Lr9.</i> | v2: Ck 9835 <i>Lr2a</i> {10146}. Ck 9663 <i>Lr2a Lr10</i> {10146}. Lockett <i>Lr24</i> {10146}. |
| <i>Lr10.</i> | v2: Ck 9663 <i>Lr2a Lr9</i> {10146}. |
| <i>Lr11.</i> | v: Pioneer 2850 {0523}, Pocahontas {10146}, Saluda {10146}. |
| <i>Lr13.</i> | v2: AC Barrie <i>Lr16</i> {10178}. |
| <i>Lr16.</i> | After the existing reference for 2BS add: ',10170'. v: AC Domain {10170}; AC Foremost {10170}; McKenzie {10170}. v2: AC Barrie <i>Lr13</i> {10178}. ma: Distally located: <i>Lr16 – Xwmc764-2B</i> , 1, 9, and 3 cm, respectively, in crosses RL4452 / AC Domain, BW278 / AC Foremost, and HY644 / McKenzie (10170,10189). |
| <i>Lr17a.</i> | v: Jagger {10146}. |

- Lr24.** **v:** Lockett *Lr9* {10146}.
ma: Linked with SCAR marker SCS73719 earlier thought to tag *Lr19* {10147}.
- Lr50.** **v:** Correct existing entry of WGR36 to 'KS96WGRC36 = TAM*3 / TA870 {0221}'. Add to existing entries: U2657 = Karl 92*4 / TA674 {0221}; U3067 = TAM107*4 / TA874 {0221}; U3193 = TAM107*4 / TA874 {0221}.
tv: *T. timopheevii* subsp. *ameniacum* TA145 {0221}; TA874 {0221}; TA870 {0221}; TA895 {0221}.
ma: Linked with *Xgwm382-2B* (6.7 cM) and *Xgdm87-2B* (9.4 cM) {0221}.
- Lr53** {10203}. *LrS8* {10204}. 6BS {10203}.
v: 98M71 = AUS 91388 = *T. turgidum* subsp. *dicoccoides* 479 / 7*CS {10204}.
tv: *T. turgidum* subsp. *dicoccoides* 479 {10204}.
- Lr54** {10139}. Derived from *Ae. kotschyii*.2DL {10139}.
v: Line S14 {10139}.
ad: Line 8078 {10139}.
al: *Ae. kotschyii* 617 {10139}.
- Lr55** {10180}. Derived from *Elymus trachycaulis* {10180}. 1B (T1BL·1H'S {10180}).
ad: CS + 1H' {10180}.
v: KS04WGRC45 = Heyne*3 / TA5586.

Complex genotypes:

AC Splendor: *Lr1 Lr16 Lr34* {10179}.

AC Teal: *Lr1 Lr13 Lr16* {821}.

Alsen: *Lr2a Lr19 Lr13 Lr23 Lr34* {10152}.

Norm: *Lr1 Lr10 Lr13 Lr16 Lr23 Lr34* {10152}.

At end of section add to: Genotype lists: U.S.A. cultivars. '{....,10146,10152}'.

89.3. QTL for reaction to *P. triticina*

QTL: Two QTL for slow leaf rusting, located on chromosome arms 2B and 7BK, were mapped for final severity, area under disease progress, and infection rate in the CI 13227 (resistant) / Suwon (susceptible) SSD population {10211}. The *QLr.osu-2B* was associated to microsatellite markers *Xbarc18-2B* and *Xbarc167-2B* ($R^2 = 9-18\%$). The *QLr.osu-7BL* was associated to microsatellite marker *Xbarc182-7B* ($R^2 = 12-15\%$) {10211}. CI 13227 contributed the resistant alleles for both QTL.

90. Reaction to *Pyrenophora tritici repens*

Delete the second sentence of the introduction and replace with 'Virulence in the pathogen is mediated by host-specific toxins and host resistance is characterized by insensitivity to those toxins. Three toxins, Ptr ToxA, Ptr ToxB, and Ptr ToxC have been identified (see {10153}).'

90.1 Insensitivity to tan spot toxin

- tsn1** Add reference
v: AC Barrie {10153}; AC Cadillac {10153}; AC Elsa {10153}; Hadden {10155}; Laura {10207}.
ma: Completely linked to markers *Xfcg1-5B*, *Xfcg10-5B*, *Xfcg16-5B*, and *Xfcg17-5B* {10207}.

90.2

In the 2004 Supplement change *tsc1* to *tsc2*.

QTL: Replace 2004 entry with: 'ITMI population: In addition to *tsc2* which accounted for 69 % of the phenotypic variation in response to race 5, a QTL in chromosome 4AL (*Xksu916(Oxo)-4AS*, W-7948) accounted for 20 % of the phenotypic variation {10015}.'

Add at the end of the section 'Introgressions of genes for insensitivity to Ptr ToxA and Ptr ToxB are outlined in {10153}.'

92. Reaction to *Schizaphis graminum*

- Gb2.** ma: 2.7 cm proximal to *Sec1* in 1RS, but cosegregated with *Sec-1P* {10167}.
- Gb3.** ma: *Xgwm037-7D* – 0.4 cM – *Gb3/Xwmc634-7D* – 0.8 cM {10169}.
- Gb7** {10169}. 7DL {10169}. v: Synthetic W7984 {10169}.
- tv: *Ae. tauschii* TA1651 {10169}.
- ma: *Xwg420-7D* – 2.1 cM – *Gb7* – 13.4 cM – *Xwmc671-7D* {10169}.
- Gby** {10192}. 7A {10192}. v: Sando's Selection 4040 {10192}.
- ma: *Xpsr119-7A/Xbcd98-7A* – 5.8 cM – *Gby* – 3.8 cM – *XPr1B-7A* {10192}.
- Gbz** {10171}. 7DL (10171). v: KSU97-85-3 {10171}.
- tv: *Ae. tauschii* TA1675 {10171}.
- ma: *Xgdm46-7DI* – 9.5 cM – *Xwmc157-7D/Gb3/Gbz* – 5.1 cM – *Xbarc53-7D* {10171}.

QTL: Antibiosis was associated with several markers, including *Rc3* (7DS) in chromosome 7D {10167}.

Reaction to Soil-Borne Cereal Mosaic

Sbm1 [{10132}]. ***SbmCz1*** {10132}. v: Cadenza {10132}.

Sbm1 was identified in a DH population of Avalon (susceptible) / Cadenza {10132}.

93. Reaction to *Tapesia yellundae*

Add at end of section: Resistance was reported in line SS767 = PI 611939, a 4J(4D) substitution line {10134}. The alien chromosome was derived from *Th. ponticum*.

94. Reaction to *Tilletia caries*

- Bt8.** v: HY476 {10181}.
- Bt10.** v: AC2000 {10181}; AC Cadillac {10181}; AC Carma {10181}; AC Crystal {10181}; AS Foremost {10181}; AC Taber {10181}; AC Vista {10181}.

97. Reaction to Wheat Spindle Streak Mosaic Bymovirus (WSSMV)

Wss1 {10154}. Derived from *Haynaldia villosa*. 4D (T4DL·4VS) {10154}.

tr: NAU413 {10154}.

su: Yangmai#5 4V(4D) {10154}.

100. Reaction to Colonization by *Eriophyes tulipae*

***Cmc1*.** i: Norsar*5 / *Cmc1* {10166}.

***Cmc2*.** i: Norstar*5 / *Cmc2* {10166}.

***Cmc3*.** i: Norstar*5 / *Cmc3* {10166}. Need to confirm relationship of 1RS segment in Amigo and Salmon as this NIL was derived from KS80H4200 a Chinese Spring Salmon line.

IV. GENETIC LINKAGES**Chromosome 1AS**

Xgli-A5 – Pm3g 5.2 cM {0070}

Chromosome 2AL

| | | |
|-------------------|----------------|---------|
| Cent – <i>Tc2</i> | 46.8cM + 0.9cM | {10133} |
| <i>Yr32 – Yr1</i> | I & 35 cM | {10016} |
| <i>Tc2 – Lg1</i> | 11.9 cM | {10133} |

Chromosome 2BS

Yr27 – Lrl 33.6cM ± 2.0 cM {928}

Chromosome 2BL

Cent - *Tc2* 40.7 cM ± 0.9 cM {10133}
 Gene order: Cent - *Xgwm382-2B* - 8.0 cM - *Xgwm619-2B* - 35.7 cM - *Tc2* - 9.1 cM - *lg1* {10133}

Chromosome 2DL

Cent - *Tc3* 38.8 % ± 5.8 % {10131}

Chromosome 3AS

Br-A1 - Cent 20.6 cM {10182}

Chromosome 3DL

Br-D1 - Cent 21.1 cM {10182}

Chromosome 7DL

Gb7 - *Gb3* 8.75 cM {10169}

References**Update:**

- 928. McDonald et al. 2004 Euphytica 239-248.
- 953. This reference can be deleted. (after checking the linkage Table for 2BS).
- 0163. Full reference from 2001 Supplement needs to be entered in the database.
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New.

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VI. ABBREVIATIONS USED IN THIS VOLUME.**PLANT DISEASES, PESTS, AND PATHOGENS:**

BYDV = barley yellow dwarf virus
BMV = barley mosaic virus
CCN = cereal cyst nematode, *Heterodera avenae*
FHB = Fusarium head blight
RWA = Russian wheat aphid
SBMV = soilborne mosaic virus
SLB = Septoria leaf blotch
WDF = wheat dwarf mosaic
WSBMV = wheat soilborne mosaic virus
WSMV = wheat streak mosaic virus
WSSMV = wheat spindle streak mosaic virus
E. graminis f.sp. tritici = *Erysiphe graminis* f.sp. *tritici* = the powdery mildew fungus
F. graminearum = *Fusarium graminearum* = head scab fungus
F. nivale = *Fusarium nivale* = snow mold fungus
H. avenae = *Heterodera avenae* = cereal cyst nematode
P. recondita f.sp. tritici = *Puccinia recondita* f.sp. *tritici* = leaf rust fungus
P. striiformis f.sp. tritici = *Puccinia striiformis* f.sp. *tritici* = strip rust fungus
P. graminis = *Polymyxa graminis* = wheat soilborne mosaic virus vector
R. cerealis = *Rhizoctonia cerealis* = sharp eyespot
R. solani = *Rhizoctonia solani* = Rhizoctonia root rot
R. padi = *Rhonopalosiphum padi* = bird cherry-oat aphid
S. tritici = *Septoria tritici* = Septoria leaf spot fungus
S. graminearum = *Schizaphus graminearum* = greenbug
St. nodorum = *Stagonospora nodorum* = Stagonospora glume blotch
T. indica = *Tilletia indica* = Karnal bunt fungus

SCIENTIFIC NAMES AND SYNONYMS OF GRASS SPECIES (NOTE: CLASSIFICATION ACCORDING TO VAN SLAGEREN, 1994):

A. strigosa = *Avena strigosa*
Ae. cylindrica = *Aegilops cylindrica* = *Triticum cylindricum*
Ae. geniculata = *Aegilops geniculata* = *Aegilops ovata* = *Triticum ovatum*
Ae. speltoides = *Aegilops speltoides* = *Triticum speltoides*
Ae. tauschii = *Aegilops tauschii* = *Aegilops squarrosa* = *Triticum tauschii*
Ae. triuncialis = *Aegilops triuncialis* = *Triticum triunciale*
Ae. umbellulata = *Aegilops umbellulata* = *Triticum umbellulatum*
Ae. peregrina = *Aegilops peregrina* = *Aegilops variabilis* = *Triticum peregrinum*
Ae. ventricosa = *Aegilops ventricosa* = *Triticum ventricosum*
S. cereale = *Secale cereale* = rye
T. aestivum = *Triticum aestivum* = hexaploid, bread, or common wheat
T. monococcum subsp. *aegilopoides* = *Triticum boeoticum*
T. dicoccum = *Triticum dicoccum* = *T. dicocom*
T. durum = *Triticum durum* = durum, pasta, or macaroni wheat
T. macha = *Triticum macha*
T. militinae = *Triticum militinae*
T. spelta = *Triticum spelta*
T. timopheevii subsp. *timopheevii* = *Triticum timopheevii*
T. timopheevii subsp. *armeniacum* = *Triticum araraticum* = *T. araraticum*
T. turgidum subsp. *dicoccoides* = *Triticum dicoccoides* = wild emmer wheat
T. turgidum subsp. *dicoccum* = *Triticum dicoccum*
T. urartu = *Triticum urartu*
Th. bessarabicum = *Thinopyrum bessarabicum*

SCIENTIFIC JOURNALS AND PUBLICATIONS:

Agron Abstr = Agronomy Abstracts
Ann Wheat Newslet = Annual Wheat Newsletter
Cereal Res Commun = Cereal Research Communications
Curr Biol = Current Biology
Eur J Plant Path = European Journal of Plant Pathology
Int J Plant Sci = International Journal of Plant Science
J Cereal Sci = Journal of Cereal Science
J Hered = Journal of Heredity
J Phytopath = Journal of Phytopathology
J Plant Phys = Journal of Plant Physiology
Mol Gen Genet = Molecular and General Genetics
PAG = Plant and Animal Genome (abstracts from meetings)
Plant Breed = Plant Breeding
Plant, Cell and Envir = Plant, Cell and Environment
Plant Cell Rep = Plant Cell Reporter
Plant Physiol = Plant Physiology
Sci Agric Sinica = Scientia Agricultura Sinica
Theor Appl Genet = Theoretical and Applied Genetics
Wheat Inf Serv = Wheat Information Service

UNITS OF MEASUREMENT:

bp = base pairs
bu = bushels
cM = centimorgan
ha = hectares
T = tons
m³ = cubic meters
μ = micron
me = milli-equivalents
mmt = million metric tons
mt = metric tons
Q = quintals

MISCELLANEOUS TERMS:

Al = aluminum
AFLP = amplified fragment length polymorphism
ANOVA = analysis of variance
A-PAGE = acid polyacrylamide gel electrophoresis
AUDPC = area under the disease progress curve
BW = bread wheat
CHA = chemical hybridizing agent
CMS = cytoplasmic male sterile
CPS = Canadian Prairie spring wheat
DH = doubled haploid
DON = deoxynivalenol
ELISA = enzyme-linked immunosorbent assay
EMS = ethyl methanesulfonate
EST = expressed sequence tag
FAWWON = Facultative and Winter Wheat Observation Nursery
GA = gibberellic acid
GIS = geographic-information system
GM = genetically modified

HPLC = high pressure liquid chromatography

HMW = high-molecular weight (glutenins)

HRSW = hard red spring wheat

HRRW = hard red winter wheat

HRW = hard red wheat

HWSW = hard white spring wheat

HWWW = hard white winter wheat

ISSR = inter-simple sequence repeat

kD = kilodalton

LMW = low molecular weight (glutenins)

MAS = marker-assisted selection

NSF = National Science Foundation

NILs = near-isogenic lines

NIR = near infrared

NSW = New South Wales, region of Australia

PAGE = polyacrylamide gel electrophoresis

PCR = polymerase chain reaction

PFGE = pulsed-field gel electrophoresis

PMCs = pollen mother cells

PNW = Pacific Northwest (a region of North America including the states of Oregon and Washington in the U.S. and the province of Vancouver in Canada)

PPO = polyphenol oxidase

QTL = quantitative trait loci

RAPD = random amplified polymorphic DNA

RCB = randomized-complete block

RFLP = restriction fragment length polymorphism

RILs = recombinant inbred lines

RT-PCR = real-time polymerase-chain reaction

SAMPL = selective amplification of microsatellite polymorphic loci

SAUDPC = standardized area under the disease progress curve

SCAR = sequence-characterized amplified region

SDS-PAGE = sodium dodecyl sulphate polyacrylamide gel electrophoresis

SE-HPLC = size-exclusion high-performance liquid chromatography

SH = synthetic hexaploid

SNP = single nucleotide polymorphism

SRPN = Southern Regional Performance Nursery

SRWW = soft red winter wheat

SRSW = soft red spring wheat

STMA = sequence tagges microsatellite site

SWWW = soft white winter wheat

SSD = single-seed descent

SSR = simple-sequence repeat

STS = sequence-tagged site

TKW = 1,000-kernel weight

UESRWWN = Uniform Experimental Soft Red Winter Wheat Nursery

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